MERANT

Edition 2.5

PVCS VERSION MANAGER™ INSTALLATION GUIDE

Merant
3445 NW 211th Terrace
Hillsboro, Oregon 97124

MA-VM75-INST

Table of Contents

Part 3: Installing VM I-Net

Welcome to Version Manager

Thank you for choosing Merant® PVCS® Version Manager™, a powerful and versatile version control system that will revolutionize the way you develop software. Version Manager helps you organize, manage, and protect your software development projects on every level—from storing and tracking changes to individual files, to managing and monitoring an entire development cycle.

Purpose of this manual

This manual provides instructions for installing Version Manager on Windows and UNIX operating systems. It is intended for the *Administrator*, the person who installs and configures software for use in a network environment, and the *User*, the person who completes the workstation installation.

For more information

Refer to the *PVCS Version Manager Getting Started Guide* for a description of the Version Manager documentation set, a summary of the ways to work with Version Manager, and instructions for accessing the Online Help.

Edition status

This is Edition *2.5* of the *PVCS Version Manager Installation Guide.* The information in this edition applies to *Release 7.5 of PVCS Version Manager* or later. This edition supersedes earlier editions of this manual.

Typographical Conventions

The following typographical conventions are used in the online manuals and online help. These typographical conventions are used to assist you when using the documentation; they are not meant to contradict or change any standard use of typographical conventions in the various product components or the host operating system.

Convention	Explanation
italics	Introduces new terms that you may not be familiar with and occasionally indicates emphasis.
bold	Emphasizes important information and field names.
UPPERCASE	Indicates keys or key combinations that you can use. For example, press the ENTER key.
`monospace`	Indicates syntax examples, values that you specify, or results that you receive.
`monospaced italics`	Indicates names that are placeholders for values you specify; for example, *`filename`*.
`monospace bold`	Indicates the results of an executed command.
vertical rule |	Separates menus and their associated commands. For example, select File | Copy means to select Copy from the File menu. Also, indicates mutually exclusive choices in a command syntax line.
brackets []	Indicates optional items. For example, in the following statement: `SELECT [DISTINCT]`, DISTINCT is an optional keyword.

Convention	Explanation
. . .	Indicates command arguments that can have more than one value.
	Shows you which shortcut button to click. Shortcut buttons are placed in the margin.

Ordering Hard-Copy Manuals

As part of your Version Manager license agreement, you may print and distribute as many copies of the PVCS Version Manager manuals as needed.

If you do not want to print each of these online manuals, you can order hard-copy versions from Merant. To order, please contact your sales representative for assistance.

Contacting Technical Support

Merant provides technical support for all registered users of this product, including limited installation support for the first 30 days. If you need support after that time, contact us using one of the methods below or purchase further support by enrolling in the SupportNet program. For more information about SupportNet, contact your sales representative.

Technical support is available 24 hours a day, 7 days a week, with language-specific support available during local business hours. For all other hours, technical support is provided in English.

WWW	SupportNet Customers can report problems and ask questions on the SupportNet web page: http://support.merant.com/ To submit an issue, click on the **Report a Problem** link and follow the instructions. The SupportNet Web site contains up-to-date technical support information, which you can access from the SupportNet web page. Our SupportNet Community shares information via the Web, automatic E-mail notification, newsgroups, and regional user groups. SupportNet Online is our global service network that provides access to valuable tools and information for an online community for users. SupportNet Online also includes a KnowledgeBase, which contains how-to information and allows you to search on keywords for technical bulletins. You can also download fix releases for your PVCS products.
E-mail	support@merant.com

Telephone	Asia Pacific	+61 3 9522 4455
	Australia	1800 335 664
	Österreich	0800 292 783
	Belgique (Langue Française)	0800 774 79
	France	0800 915 607
	Deutschland	0800 1822 496
	Hong Kong	800 900 521
	Italia	800 791 179
	Japan	0120 749090 or 00531 790014 (in Japan only)
	Nederland	0800 022 1609
	New Zealand	0800 444 515
	Singapore	800 4481 230
	South Africa	0800 99 1115
	South Korea (Korean)	003 0844 0044
	España	900 968 929
	Suisse (Langue Française	0800 836 736
	Schweiz (Deutschsprachig)	0800 836 737
	United Kingdom and Ireland	0808 100 2672
	USA, Canada, and Mexico	1 800 443 1601

All countries, for support in the following languages between 09.00 and 18.00 CET (Central European Time)	English Speaking	+44 1727 811 122
	Langue Française	+44 1727 811 289
	Deutschsprachig	+44 1727 811 312
	Idioma Italiano	+44 1727 811 136
	Habla Español	+44 1727 811 134
Fax	Asia Pacific, Australia, and New Zealand	+61 3 9522 4477
	Europe, Middle East, and South Africa	+44 1727 812 665 or +44 1727 869 804
	Japan	+81 3 5456 5434
	U.S.	1 503 645 6260
Mail	3445 NW 211th Terrace, Hillsboro, OR 97124 USA	

When you contact us, include the following information:

- The **product serial number** located on the Product Registration Information card in the box. The number will be checked to verify your eligibility to receive support. If you do not have a current SupportNet contract, we will ask that you speak with a sales representative.
- Your **name and organization**. On a first-time call, you may be asked for full customer information including location and contact details.
- The **version and build number** of the PVCS product you are using.
- The type and version of the **operating system** you are using.

- Any **third-party software and other environmental information** necessary to understand the problem.
- A **brief description of the problem and the steps necessary to re-create** it. Specific error messages are needed. Depending on the complexity of the problem, you may be asked to submit a re-creatable example demonstrating the problem.
- An assessment of the **severity level** of the reported problem.

Part 1: Planning Your Installation

Part 1: Planning Your Installation contains the following chapter:

1 Before You Install

In this Chapter

Installation Options

Version Manager features

The Version Manager installation program allows you install the following features:

- PVCS Version Manager
- PVCS VM Development Interfaces (Windows only)
- Merant Plugin for Eclipse (Windows only)
- PVCS VM Developer's Toolkit
- PVCS Workstation Install (Windows only)
- PVCS VM I-Net
- PVCS VM WebDAV Server
- PVCS VM Command-Line

System Requirements

The Version Manager graphical user interface (GUI), command-line interface, project command-line interface, and I-Net interface are supported on both Windows and UNIX platforms. On UNIX, you can run the GUI under the X Windows system with Motif or Common Desktop Environment (CDE). The Development Interface is supported on Windows.

For specific supported platform, version information, and disk space requirements, refer to the readme file or select the Version Manager product link on http://www.merant.com/pvcs.

Supported UNIX and Cross-Platform Networks

Version Manager runs on writable UNIX file systems such as the UNIX file system (UFS) and the Network File System (NFS).

Version Manager archives and projects can be shared with Windows users who are sharing UNIX file systems with NFS or Samba. For best results, we recommend that you choose a 32-bit NFS package that supports the following:

- Long filenames
- Case preservation
- Graphical and command-line interfaces
- The ability to set file permissions or *umask*

For more information on sharing archives and projects between a UNIX system and a Windows local area network, see the *PVCS Version Manager Administrator's Guide*.

Planning an Installation

Before you install Version Manager, review the following sections for information about the following:

- Planning a network installation
- Planning a cross-platform installation
- Planning a Development Interface installation
- Planning a VM I-Net installation
- Planning a WebDAV Server installation
- Registering an installation

- When to upgrade 5.3/6.0 project roots depending on your needs

---

NOTE Throughout the Version Manager documentation, there are references to 5.3/6.0 project roots. For conciseness, 5.2 is not documented, although any functions documented for 5.3/6.0 project roots also apply to 5.2 project roots.

Upgrading 5.3/6.0 Project Roots

Installing and using this release of Version Manager enables you to take advantage of the functions and features identified in the *PVCS Version Manager Getting Started Guide*. Because these features are more powerful and intuitive than the features provided in earlier releases of Version Manager, we recommend you upgrade your 5.3/6.0 project roots to the new project database format.

For information on upgrading a 5.3/6.0 project root by copying it to a project database, refer to "Planning a Project Database" in the *PVCS Version Manager Administrator's Guide*.

Supported and Restricted Functionality for 5.3/6.0 Project Roots

Without upgrading a 5.3/6.0 project root to the project database format, there are many features of the new Version Manager GUI that you can still use. This release of Version Manager supports all of the basic Version Manager tasks, such as adding workfiles, checking in workfiles, checking out revisions, and assigning version labels. All of these tasks can be completed more easily than with the Version Manager 6.0 GUI.

Some tasks, however, are restricted. When you open and work with a 5.3/6.0 project root in Version Manager, you cannot:

- Create new projects within the 5.3/6.0 project root.
- Delete projects from the 5.3/6.0 project root.
- Copy projects, subprojects, or versioned files from a project database into a 5.3/6.0 project root.
- Configure a 5.3/6.0 project root.
- Define or modify security on a 5.3/6.0 project root.

To complete any of these tasks, upgrade your existing projects to the new project format, or use the Version Manager 6.0 GUI. This release of Version Manager honors the changes.

Planning a Network Installation on Windows

A network installation of Version Manager allows your users to execute the program from a network location. This saves disk space on local workstations and ensures that everyone is running the same version of the product.

A network installation does the following:

If you install a...	Version Manager. . .
Workstation	• Creates or modifies the ISLV.INI in the operating system directory, such as \WINDOWS • Adds Version Manager icons to the user's workstation • Modifies the path to point to the shared executable directory • Creates a default project database for Development Interface, if you choose to install it
Server	• Installs Version Manager executable files • Installs the sample project database • (Optional) Installs the Development Interface executables • (Optional) Installs the default Development Interface project database • Creates or modifies the ISLV.INI in the operating system directory, such as \WINDOWS • Adds Version Manager icons to the workstation from which it was installed • Modifies the path to point to the shared executable directory

To plan a network installation:

1 Before you install, determine the workstation/server locations, and verify that all users have network permissions to the location where Version Manager will be installed.

- The *workstation* is the user's workstation.
- The *server* is a directory on a network server disk volume that contains all shared files.

2 Verify that all users use the same drive mapping for the network location and that the workstation from which the network copy will be installed uses this same drive mapping. For instance, if you install the workstation setup to a location on the network mapped to P:\pvcs, all users must also map the network location to P:\pvcs.

3 Follow the instructions to install Version Manager to a network location from a workstation (see "Installing Version Manager from CD-ROM" on page 35). Make sure that the workstation is running the operating system appropriate to your Version Manager installation.

IMPORTANT! To set up a workstation install of Version Manager, always install Version Manager to the network from a local workstation. Do not install the program directly at the network server console. Users will then install Version Manager from the network to their local workstations.

Planning a Cross-Platform Installation

If you are planning to share archives among UNIX and Windows users, you must:

- Install Version Manager on both your Windows and UNIX systems.
- Use NFS or Samba for sharing file systems between UNIX and Windows. Version Manager now supports universal naming conventions (UNC) in nfsmap files.

See the *PVCS Version Manager Administrator's Guide* for instructions about setting up a cross-platform environment after you have installed Version Manager on both Windows and UNIX.

Planning a Development Interface Installation

With the Version Manager Development Interface, you can access Version Manager features from within integrated development environments (IDEs). Without ever leaving the development environment, you can get files, check files out, check files in, and more.

You can use the Development Interface with any of the following:

- Projects in supported Source Code Control (SCC) Interface compliant IDEs, including Microsoft Visual Basic, Microsoft Visual C++, Microsoft Visual InterDev, Sybase PowerBuilder, Macromedia ColdFusion Studio, IBM VisualAge for Java, and Rational Rose Enterprise.
- Web projects in supported COM Interface compliant IDEs, including Microsoft FrontPage and Microsoft Visual InterDev.
- Projects in supported Eclipse Interface compliant IDEs, including IBM Websphere Studio Application Developer.

For information on planning an installation of the Development Interface, see Chapter 16, “Installing the Development Interface,” on page 169.

Planning a VM I-Net Installation

With VM I-Net, you can perform version control tasks in a browser-based interface available on the Internet or intranet. VM I-Net is appropriate for users in remote or mobile locations who do not need access to administrative features.

VM I-Net is a component of the Version Manager Web Server installation. You install VM I-Net to a machine running a supported web server. Once you have installed VM I-Net and

configured a project database, users can connect to VM I-Net in their web browser and download the client interface.

For information on installing and configuring VM I-Net, see "Part 3: Installing VM I-Net" on page 79.

Planning a WebDAV Server Installation

With WebDAV Server, you can access a Version Manager project database from within a supported WebDAV client. You can automatically check out and check in files in that project database, as well as perform other common Version Manager tasks. For example, the WebDAV integration with Microsoft Office allows you to open a revision from an Office application, automatically checking it out from Version Manager. After you make changes and close that file, it gets checked back into Version Manager.

WebDAV Server is a component of the Version Manager Web Server installation. For more information on installing and configuring WebDAV Server, see Chapter 18, "Installing WebDAV Server," on page 185.

Registering Version Manager Online

You can register your copy of Version Manager online during installation. Online registration provides the following benefits:

- Activates your technical support account, allowing us to more efficiently assist you if you need to contact us.
- Allows you to subscribe to our monthly email newsletter on the latest PVCS product developments.
- Provides a brief overview of the online resources you can access from the Merant PVCS website, including technology partner sites, and live chat sessions.

When you choose to register online, a registration webpage appears automatically in your default HTML browser.

Part 2: Installing Version Manager

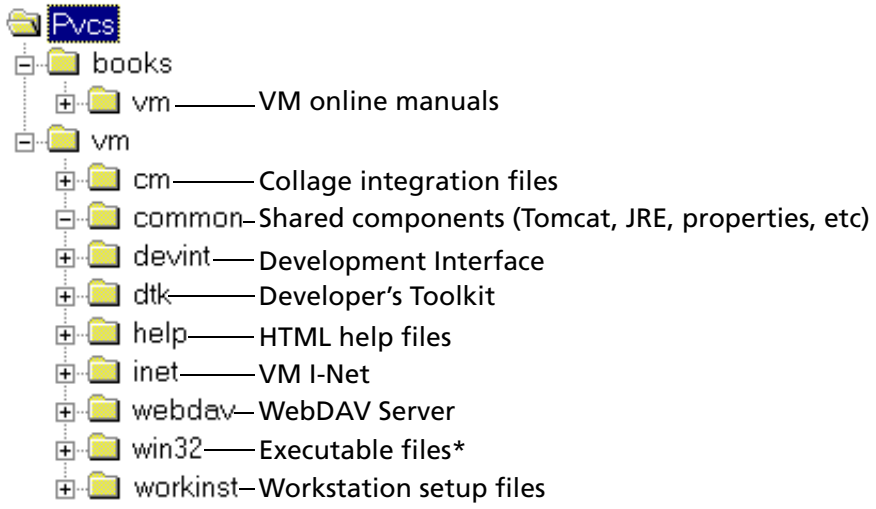
Part 2: Installing Version Manager contains the following chapters:

2 Installing Version Manager on Windows

In this Chapter

Default Installation Directory Structure

When you install Version Manager on a Windows platform, the default installation directory is under Program Files as shown in the illustration below.



* Executable files include application files for the Version Manager GUI, the command-line and project command-line interfaces, and Development Interface (if you choose to install it).

Installing Version Manager from CD-ROM

This procedure provides instructions for installing Version Manager from the PVCS Series CD-ROM to your local drive, a network location, or a web server system. If a network install is performed, users can subsequently perform a workstation install and then run a shared version of the Version Manager components that were installed on the network. For instructions on performing a workstation install, see "Preparing a Workstation Installation" on page 40.

If you install on a network, the Setup program automatically sets up the workstation from which you installed so that you can run Version Manager.

For information on installing the Development Interface, see Chapter 16, "Installing the Development Interface," on page 169.

To install from CD-ROM:

1 Insert the PVCS Series CD into the CD-ROM drive.

If the CD-ROM drive is on a network, you must mount the CD and create a mapping to the CD-ROM drive.

NOTE Do not use Universal Naming Conventions (UNC) to specify the CD-ROM mapping during installation.

2 Use the autorun facility or from the Start menu, select Run.

3 If you are not using the autorun facility, navigate to *CD-ROM_drive*:\vm\win32\setup.exe and click OK.

4 In the Welcome dialog box, click Next.

5 In the Product Registration window, do one of the following:

- If you are performing a licensed install, enter your name, company name, and the serial number and key provided to you by Merant, and then click Next.
- If you are installing an evaluation copy, enter your name and your company name, enter Eval as the serial number, and leave the Key field blank; then, click Next.

A registration confirmation window is displayed, showing the information you entered.

6 If the registration information is correct, click Yes. Otherwise, click No to return to the Product Registration window and correct your registration information.

7 A Product License Agreement window is displayed. If you accept the agreement, click Yes. If you do not accept the agreement, click No; the installation stops and no software is installed.

8 Click OK to confirm that the product registration was successful.

9 In the Customer Information window, choose whether the Version Manager software will be available for all users or for the current user only.

NOTE If you are installing the Development Interface, see Chapter 16, "Installing the Development Interface," on page 169 for important installation information.

---

10 In the Setup Type window, choose the type of installation:

- **Local**: Install PVCS Version Manager features on this machine.
- **Network**: Install PVCS Version Manager features and enable workstation installs.

- **Web Server**: Install PVCS Version Manager features including PVCS VM I-Net and PVCS VM WebDAV on this web server.

11 Accept the default directory (*drive*:\program files\pvcs, where *drive* is the default Windows drive) or enter a different location and click Next.

NOTE If you are installing Version Manager to a network location so that other users can perform a workstation installation, make sure that you use the same drive mapping that the users have defined. For example, if the users have mapped the location to P:\pvcs, you must use the same drive mapping P:\pvcs.

For information about the files that will be installed and the directories that will be created in this location, refer to "Default Installation Directory Structure" on page 34.

12 When prompted to select the Version Manager components, select the components you want to install and click Next. The choices are:

- **PVCS Version Manager**: Contains the PVCS Version Manager graphical user interface.
- **PVCS VM Development Interfaces**: Contains the PVCS Version Manager Development Interface for version management within integrated development environments (IDEs). For more information on installing the Development Interface, see Chapter 16, "Installing the Development Interface," on page 169.
- **Merant Plugin for Eclipse:** Contains the PVCS Version Manager Development Interface for Eclipse based IDEs, such as IBM WSAD.
- **PVCS VM Developer's Toolkit** (DTK): Contains the public API for developing applications that use PVCS Version

Manager features. For more information about installing the DTK, refer to Chapter 17, "Installing the PVCS Developer's Toolkit," on page 179.

- **PVCS VM Documentation**: Contains the complete PVCS Version Manager documentation set.
- **PVCS VM Sample Project Database**: Provides a sample PVCS Version Manager project database for use with all the interfaces.
- **PVCS VM Command-Line**: Allows access to PVCS Version Manager features from the command line.
- **PVCS Workstation Install** (available with Network installation only): Allows an Administrator to provide quick installation and access to the PVCS Version Manager program on a network. For more information on workstation installation, see "Preparing a Workstation Installation" on page 40.

NOTE If you select to install the Workstation Install, the Setup program creates a file named setup.iss that records the component and program group selections that you make during the install. These selections can be used later in silent workstation installs in which the users will not need to make any choices. For more information on workstation installations, see "Preparing a Workstation Installation" on page 40.

- **PVCS VM I-Net** (available with Web Server installation only): Contains the PVCS Version Manager web interface. For more information on installing VM I-Net, see Chapter 6, "Installing VM I-Net on Windows," on page 91.
- **PVCS VM WebDAV** (available with Web Server installation only): Contains the PVCS Version Manager WebDAV server. For more information on installing WebDAV Server, see Chapter 18, "Installing WebDAV Server," on page 185.

13 If you chose to install the Development Interfaces, you are prompted to select a default project database for Development Interface projects. By default, Version Manager creates a default project database called IDE Project Database under the <*VM_Install_Dir*>\vm\devint directory. Browse to select a different database or click the next button to accept the default. Do not use Universal Naming Conventions (UNC) to specify the location of the default project database. For more information on installing the Development Inteface, see Chapter 16, "Installing the Development Interface," on page 169.

IMPORTANT! If you are installing the Development Interface for use with Microsoft FrontPage or Visual InterDev web projects, the default project database must be located on a local drive on the web server. For more information, see "Installing to a Web Server" on page 174.

---

14 If you are installing the **Merant Plugin for Eclipse**, you will be prompted to specify the installation directory of your Eclipse-based IDE. Note the following:

- Based on the version of Eclipse found in the directory you specify, an Eclipse 1 or Eclipse 2 integration will be installed.
- To integrate to multiple Eclipse installations, you must run the Version Manager installer once for each Eclipse installation.

15 When prompted to select a program folder, either accept the default (PVCS Version Manager) or enter a different folder and click Next.

16 If the current settings are correct, click Next to start copying the files or click Back to return to the Select Program Folders dialog box.

17 When all components are installed, you are prompted to register Version Manager online. Registering Version Manager online activates your technical support account, allowing us to more efficiently assist you if you need to contact us. When you register online, you can also choose to subscribe to our monthly email newsletter on the latest PVCS product developments, and review the online resources you can access from the Merant PVCS website.

    To register Version Manager, choose the Register Now option and click Next. The registration webpage appears in your default system HTML browser. Your name and registration number automatically appear on the page. Follow the instructions on the page to complete registration.

18 Follow the remaining prompts to complete the installation.

Preparing a Workstation Installation

A workstation installation enables users to run a shared copy of Version Manager on a network. Users can share access to the Version Manager application and the Version Manager documentation. Version Manager components that users can share include:

- The graphical user interface (GUI)
- The Development Interface

Users cannot share a copy of the Developer's Toolkit (DTK).

Development Interface on the network

If you choose to install the Development Interface, the workstation installation will include Development Interface components. To set up Development Interface workstation installation components, install Version Manager and the Development Interface to a network location.

If you want to use the Development Interface with FrontPage or Visual InterDev web projects, you must install the Interface *directly* to the web server. Because of this, you cannot simultaneously install workstation installation components to a network server and install the Development Interface for use with a web server. See Chapter 16, "Installing the Development Interface," on page 169 for more information on installing the Development Interface.

Silent workstation installs

After you have performed a network install of Version Manager, you can prepare a silent workstation setup template to simplify setup for your users. A silent workstation installation allows users to set up workstations using the options you predefine.

To prepare a silent setup, you need to create a response file by running the workstation setup program on your network. Use the "/r" flag to create the setup.iss template with all the installation options saved in the Windows directory. When you have completed running the Setup program, copy the setup.iss file to the workstation setup directory on your network and instruct your users to run the setup program with the following command-line option from thier individual workstations:

```
<VM_Install_Dir>\vm\workinst\setup.exe /s
```

Copy files locally

If you have a large number of users that will access Version Manager on the network, you can choose to copy some files locally to improve performance. These files include Java packages that can be located anywhere on the user's workstation. To copy files locally, choose the **Local Copy of Java Packages** feature during the Workstation install and specify the target directory for the files.

NOTE If you are preparing a silent workstation installation and wish to copy files locally, make sure that the target directory for the Java packages exists on your users' workstations.

To prepare a workstation installation:

1 Install Version Manager to a network location, as explained in "Installing Version Manager from CD-ROM" on page 35 and select Workstation Install as one of the components to install.

NOTE The location to which you install Version Manager and from which the users install Version Manager must be mapped to the same drive letter. For instance, if the location to which you installed Version Manager is mapped to P:\pvcs, the users must also map this location to P:\pvcs.

---

2 Launch the following program:

`<VM_Install_Dir>\vm\workinst\setup /r`

3 Use the Setup program to set installation options appropriate for your users. The installation program stores your selections in a template file called setup.iss. This file is located in the directory specified by the %WINDIR% variable.

4 Do one of the following:

- Copy setup.iss to the `<VM_Install_Dir>\vm\workinst` directory for a silent workstation install. If you copy this file, users will not need to make any choices during the install. The install is performed with the choices you made during the network install.
- Do not copy setup.iss. In this case, users must make their own choices during the workstation install.

5 Proceed to "Setting Up a Workstation" below, and "Running the Workstation Setup Program" on page 45.

Setting Up a Workstation

If your Administrator prepared a workstation installation, you can install and run Version Manager on a network.

Maintaining custom settings

Even though a workstation installation uses Version Manager from a network location where multiple users can share the application, each user can still maintain custom settings, such as how window panes are sized, whether or not to automatically dismiss dialog boxes, and which project databases were last opened. These custom settings are stored in an ISLV.INI file. The workstation setup program automatically stores an ISLV.INI initialization file in one of the directories listed below. Generally, you should not share this file with other users.

If you are using…	And you share this directory with other users…	Then…
Windows 98	\WINDOWS	You must set the ISLVINI environment variable to point to a local directory before running the workstation setup program.
Windows NT/ 2000/XP	\WINNT	

To make sure that you are not sharing this file with other users, point the ISLVINI environment variable to a local directory. This ensures that other users won't overwrite the same initialization file each time they make a change to Version Manager that is

written to the ISLV.INI file. For example, to store ISLV.INI in C:\PVCS, do one of the following:

If you are using…	Then do this…
Windows 98	**1** Add this line to AUTOEXEC.BAT: `SET ISLVINI=C:\PVCS` **2** Reboot your system for the changes to take effect.
Windows NT	**1** Click the Start button on the taskbar, and then select Settings | Control Panel. **2** Double-click the System icon. **3** In the User Environment Variables for <User> field, select ISLVINI Environment Variable. **4** In the Value field, enter C:\PVCS. **5** Choose Set, and then choose OK. **6** Reboot your system for the changes to take effect.

If you are using…	Then do this…
Windows 2000/ XP	**1** Click the Start button on the taskbar, and then select Settings | Control Panel. **2** Double-click the System icon. **3** Select the Advanced tab. **4** Select the Environment Variable button. **5** Create a new User Environment Variable if one does not already exist. **6** In the Variable Name field enter ISLVINI. **7** In the Variable Value field enter C:\PVCS. **8** Choose OK. **9** Reboot your system for the changes to take effect.

Running the Workstation Setup Program

After your administrator has installed Version Manager to at least one location on the network, you can set up your workstation.

To run the workstation setup program:

1 Do one of the following:

- If your administrator has prepared a silent install, run the `setup.exe /s` command.
- Otherwise, run the `setup.exe` command.

From the <*`VM_Install_Dir`*>`\vm\workinst` directory.

2 For non-silent installs, follow the remaining prompts to complete the installation.

Updating a Version Manager License

You can install Version Manager as a licensed product or an evaluation copy. If you are evaluating Version Manager, you can use the program for 30 days, with the option to purchase a license or renew the evaluation period. Use the procedure below to license or extend your evaluation of Version Manager.

To update a license:

1 Click the Start button on the taskbar and select Run.

2 In the Open field, enter <*VM_Install_Dir*>\vm\common\bin\win32\ipeadmn.exe and click OK.

3 Complete the Product Registration dialog as follows for your installation type, and then click OK.

For this type of installation …	Do this …
A licensed stand-alone or network install	Complete all of the fields. The required serial number and key are printed on the Product Registration card.
An evaluation stand-alone or network install	Complete all of the fields except Key. The required serial number is printed on the Product Registration card.
An evaluation or licensed workstation install	This dialog will not appear. Version Manager reads the registration information from the network installation.

4 Verify your registration information and accept the Product License Agreement to complete registration.

5 **For a network installation:** Follow the on-screen prompts to complete installation, and then instruct your users to run the registration program from <*VM_Install_Dir*>\vm\common\bin\win32\ipeadmn.exe.

The program will read the registration information that was entered during the network installation.

3 Installing Version Manager on UNIX

In this Chapter

Adding Security with setuid

Version Manager files are installed in *setuid* mode, which implements an additional level of security for your archives. The script that you run to start Version Manager on UNIX, *pvcsvmux*, calls the pvcsvmsuid program that has the setuid and setgid privileges turned on by default. This script is located in the bin directory of the Version Manager installation location.

NOTE For information about turning off setuid, refer to the *PVCS Version Manager Administrator's Guide*.

In setuid, users login as themselves, but Version Manager creates public archives as the user who owns the executables. We recommend that you create a user named *pvcs* for this purpose. This will be the only user with access to read and write to your archives.

When running in setuid mode, all files will be created as the user *pvcs*, except for workfiles, temporary files, and $HOME/.islvrc. Access control privileges can be controlled by the Version Manager access control database. Individual users who are not *pvcs* will not have the ability to modify, add, or delete the files or directories unless they are using Version Manager commands.

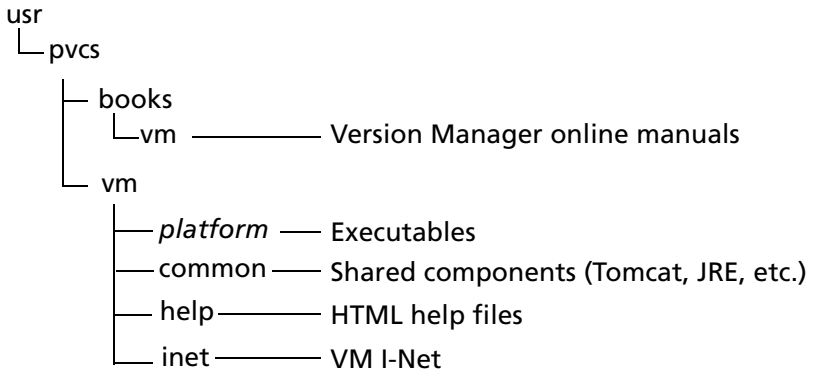
Special considerations

- If you do not implement setuid, archives can be moved, renamed, corrupted, or deleted with basic UNIX commands by anyone with permissions to your archive directory.
- You can switch between setuid and nonsetuid modes only if you have reset permissions to rwxrwxr_x (775). All users must be in the same primary group. Alternatively, you can switch between modes if you reset the directory and/or executable permissions to rwxrwsr_x (2775). In this case, the users do not have to be in the same primary group, but *pvcsgrp* must be a secondary group. See "Creating User Accounts for Version Manager" on page 52 for more information.

- If you are working in a cross-platform environment (Windows and UNIX), you cannot use setuid.
- Version Manager 6.6+ setuid conflicts with 6.5 setuid. If PVCS Version Manager 6.6 (or higher) is installed on a workstation that also has Version Manager 6.5 installed, disable setuid on the 6.6+ installation. Note that sharing installations with releases of Version Manager earlier than 6.5 does not create setuid compatibility problems.
- To run Version Manager in setuid mode on Solaris, AIX, and Linux, you must run a script after installation to create symbolic links. See "Using setuid Mode on Solaris, AIX, and Linux" on page 58.

Default Installation Directory Structure

The diagram below shows the directories that the installation program creates by default.



Creating User Accounts for Version Manager

Before you install Version Manager, we recommend that you create a user *pvcs* and group *pvcsgrp*. This will make it easier to administer Version Manager. You must login as *root* to complete this procedure.

Refer to the documentation for your operating system for more information on creating users and groups.

To create user accounts for Version Manager:

1 Login as *root* and create an installation directory, such as `/usr/pvcs`.

NOTE If you are installing Version Manager for more than one platform, create a different directory structure for each platform to avoid overwriting program files; for example: `/usr/pvcs/aix`.

---

2 Create the user who will own the executables, such as *pvcs.*

`/usr/pvcs`

This is the user's home directory, as specified by the system administrator.

3 Create a specific group, such as *pvcsgrp*, or use an already existing group, and make it the primary group for all users of Version Manager.

NOTE If you are operating in a pure UNIX environment and the PVCS executables are run in setuid mode, the *pvcsgrp* group doesn't have to be the user's primary group. Only the *pvcs* user needs to have the *pvcsgrp* group name as the primary group.

---

4 Change the owner of `/usr/pvcs` to pvcs.

```
chown pvcs /usr/pvcs
```

5 Change the group of `/usr/pvcs` to pvcsgrp.

```
chgrp pvcsgrp /usr/pvcs
```

6 Change the directory permissions as needed, as shown in the following table:

User	Permission
user *pvcs*	read, write, and execute (7 or u=rwx)
group *pvcsgrp*	setuid: read and execute (5 or g=rx)
	nonsetuid: read, write, and execute (7 or g=rwx)
other users	read and execute (5 or o=rx)

For example:

```
chmod 755 /usr/pvcs
```

or

```
chmod u=rwx,g=rx,o=rx /usr/pvcs
```

Installing Version Manager from CD-ROM

To install Version Manager:

1 Review the Version Manager readme file for UNIX issues.

2 Login as *pvcs* and change your working directory to the installation directory, such as */usr/pvcs*.

3 Insert the PVCS Series CD into the CD-ROM drive. Depending on how your workstation is configured, your CD-ROM drive may be mounted automatically. If the CD-ROM drive is not mounted, you must mount it before continuing. See the CD jewel case insert for information on how to mount the CD-ROM.

4 Navigate to the Setup program location by entering:

```
cd cdrom_path/vm/unix
```

5 Run the Setup program by entering:

```
./vminst
```

The Setup program displays a License Agreement.

6 To continue with the installation, you must agree to the license agreement by pressing ENTER; otherwise, enter `N` and the installation stops.

7 Review your current user and group. It is recommended that you install as user *pvcs* and group *pvcsgrp* or *pvcs*. Press ENTER to continue.

8 Provide the product registration information:

- Your name: enter your name.
- Your company name: enter your company name.
- Serial number: if you are installing a licensed copy of the product, enter the serial number. If you are installing an evaluation copy of the product, enter `EVAL`.
- IPE Key: if you are installing a licensed copy of the product, enter the IPE key provided to you by Merant. If you are installing an evaluation copy of the product, leave this field blank.

The Setup program then displays the product registration information that you just entered, and you are asked if you want to change any information.

9 Do one of the following:

- Press ENTER to accept the information.
- Enter `C` and press ENTER to change the information. You are prompted for the information again.

10 Press ENTER to continue the installation process after the registration file is updated.

11 When prompted to choose the Version Manager components to install, select or deselect the components as appropriate and click Next. The choices are:

- **PVCS Version Manager for UNIX**: Contains the PVCS Version Manager graphical user interface.
- **PVCS Version Manager I-Net for UNIX**: Contains the PVCS Version Manager web interface. For more information on installing VM I-Net, see Chapter 7, "Installing VM I-Net on UNIX," on page 101.
- **PVCS Version Manager WebDAV for UNIX**: Contains the PVCS Version Manager WebDAV server. For more information on installing WebDAV Server, see Chapter 18, "Installing WebDAV Server," on page 185.
- **PVCS Online Documentation (Books)**: Contains the complete PVCS Version Manager documentation set.
- **PVCS Developer's Toolkit (DTK)**: Contains the public API for developing applications that use PVCS Version Manager features. For more information about installing the DTK, refer to Chapter 17, "Installing the PVCS Developer's Toolkit," on page 179.
- **Sample Project database**: Provides a sample PVCS Version Manager project database for use with all the interfaces.

NOTE In order to complete the tutorial exercises in the *PVCS Version Manager Getting Started Guide*, you must install the sample project database.

---

12 After you have selected the components to install, complete one of the following:

- Press ENTER to continue the installation, or
- Enter `N` and press ENTER to reselect the components.

The Setup program determines which UNIX operating system you have.

13 Do one of the following:

- Press ENTER to continue installing on the detected operating system.
- Enter 2 to select a different operating system. This feature allows you to install different operating system versions of Version Manager on the same server.

NOTE You cannot create sample project databases for different operating system versions of Version Manager.

- Enter 3 to exit the installation program.

14 Specify an installation directory by doing one of the following:

- Press ENTER to accept the default, which is /usr/pvcs.
- Enter an installation directory to install to a location other than the default.

For information about the files that will be installed and the directories that will be created in this location, refer to "Default Installation Directory Structure" on page 51.

15 Confirm the installation directory path by pressing ENTER. If the directory does not exist, the Setup program tells you and asks if you want to create it.

16 Do one of the following:

- Press ENTER to confirm your platform and installation directory choices. The Setup program displays the progress of the installation and a successful completion message when finished.
- Enter E and press ENTER to exit the Setup program.

17 As the installation progresses, if you chose to install VM I-Net, you will be asked which web server should be configured for use with VM I-Net. Press ENTER to accept the default or `N` to select a different web server.

NOTE Additional web server configuration is necessary after the installation completes. See "Post-Installation Activities" on page 105 for instructions.

18 When installation is complete, you are prompted to register Version Manager online. Registering Version Manager online activates your technical support account, allowing us to more efficiently assist you if you need to contact us. When you register online, you can also choose to subscribe to our monthly email newsletter on the latest PVCS product developments, and review the online resources you can access from the Merant PVCS website.

Press ENTER to register Version Manager. The registration webpage appears in your default system HTML browser. Your name and registration number appear automatically on the page. Follow the online instructions to complete registration.

Updating a Version Manager License

You can install Version Manager as a licensed product or an evaluation copy. If you are evaluating Version Manager, you can use the program for 30 days, with the option to purchase a license or extend the evaluation period. You can only extend your evaluation once. Follow the procedure below to license or extend your evaluation of Version Manager.

NOTE All users running Version Manager must login as themselves and follow this procedure.

To update a Version Manager license:

1 Change your working directory to the /bin directory under the installation directory, such as:

```
/usr/pvcs/vm/<os>/bin
```

2 Type the following command to start the Product Registration program and press ENTER.

```
./vmreg
```

3 Accept the License Agreement to continue with registration.

4 Complete the Product Registration prompts as follows for your installation type.

For this installation…	Do this…
Licensed	Complete all of the prompts. The required serial number and key are printed on the Product Registration card.
Evaluation	Complete all of the fields except Key. The required serial number is printed on the Product Registration card.

5 Verify your registration information and press Enter to complete Version Manager registration.

Using setuid Mode on Solaris, AIX, and Linux

If you want to run Version Manager in setuid mode (default upon installation) on Solaris, AIX, and Linux, it is necessary to create symbolic links to the shared libraries of Version Manager on the operating systems Solaris, AIX and Linux. Depending on the OS, these links will be installed in the directory /usr/lib or /usr/lib/secure.

This is necessary to satisfy OS security requirements that prevent the use of shared libraries from arbitrary locations when an application is running in setuid mode. The links need to be created on every system where VM is executed.

To help create these links, a script is included that will create the appropriate links for the OS that is being used.

To create the links:

Execute the following command as root:

```
<VM_Install_dir>/vm/<os>/bin/vmlinklibs -add
```

Examples:

```
/usr/pvcs/vm/solaris/bin/vmlinklibs -add
/usr/pvcs/vm/aix/bin/vmlinklibs -add
```

You can use the option `-verify` instead of `-add` to check if the correct links are already installed, and you can use the option `-delete` to remove previously created links.

Alternatively, you can take Version Manager out of setuid mode by executing the command:

```
<VM_Install_Dir>/vm/<os>/bin/vmsetsuid -unset
```

as the user who installed Version Manager. All relevant VM executables will be taken out of setuid mode. Setuid mode can easily be re-enabled by executing the command:

```
<VM_Install_Dir>/vm/<os>/bin/vmsetsuid -set
```

To verify the links:

To verify that all executables are matching in setuid or non-setuid mode, you can execute:

```
<VM_Install_Dir>/vm/<os>/bin/vmsetsuid -verify
```

HP-UX does not require these links to run in setuid mode. See the *PVCS Version Manager Administrator's Guide* for an explanation of the reasons for running Version Manager in setuid mode.

4 After You Install

In this Chapter

Setting Up Login Sources

Before users begin using Version Manager, you should set up Version Manager to obtain user identification from a *login source*. A login source is an operating system, network, or utility that Version Manager uses to obtain user identification. Version Manager uses the user identification it obtains as the author of archive operations.

When you use a Version Manager command, the program attempts to obtain user identification from each of the login sources that you specify within Version Manager. If Version Manager cannot obtain user identification, it displays an error message and terminates. If a user ID can be obtained and no access control databases are enabled, any user can access the archives.

Valid login sources are:

Host ID	Host operating system. Use this source with systems that provide a user identification mechanism, such as UNIX or Windows NT/ 2000, or for environments in which more than one network is in use. This login source is not secure on Windows 98 systems. The directive for this option is LogIn=HOST.
LDAP ID	Lightweight Directory Access Protocol (LDAP). Use this source to authenticate user IDs and passwords against an LDAP server. Once authenticated against LDAP, user IDs are passed to the access control database, if one is in effect. The passwords, if any, in the access control database are ignored. The directive for this option is LogIn=LDAP. LDAP does not work with the command-line interface (CLI). If LDAP is the first login

source specified, the CLI will attempt to use the next login source. If no other login sources are specified, the CLI command will fail.

Login Dialog	The Version Manager GUI login utility. This source requires users to enter a password before they can use Version Manager. To use password protection, an access control database must be defined. This login source applies only to the operation of the GUI. The directive for this option is LogIn=VLOGIN.
Netware ID	Novell NetWare (Windows only). Use this source to obtain user IDs from a Novell NetWare server, rather than Windows NT/ 2000 or Windows 98. The directive for this option is LogIn=NETWARE.
VCS ID	The user's PVCS ID, which Version Manager derives from the value of the VCSID environment variable. The directive for this option is LogIn=VCSID. Be aware that using VCSID as a source for user identification is not secure. Users can circumvent security by logging in as another user or resetting the value of the VCSID environment variable.
WNet ID	Microsoft Windows networks. Version Manager obtains the user ID from the Microsoft WNET API. The directive for this option is LogIn=WNET.

When you execute Version Manager, it searches for a user ID according to the order in which you specified the login sources. Therefore, you should consider the security of your operating systems and login sources when you specify the login source order.

NOTE A Login dialog box appears if VLOGIN or LDAP is set as your login source. Cancelling the login from this dialog box cancels the login operation. Additional login sources are not searched and you cannot log into the project database or project.

For example, assuming no LDAP server is available and your users are running Windows 98, Windows NT, and HP-UX, then the available login sources are VCS Id, Host Id, and Netware Id. Because Windows NT and HP-UX are more secure than Windows 98, you must choose a login source that protects the Windows 98 users before the others. Because Netware Id is the most secure available login source for Windows 98, your login source order should be Netware Id, Host Id, and then VCS Id. Version Manager uses the Host Id login source for UNIX users.

For UNIX users: The UNIX GUI and PCLI support only the Host ID, LDAP ID, Login Dialog (PCLI uses the PCLI_ID environment variable or the -id switch rather than a dialog), and VCS ID login sources. The UNIX CLI supports only Host ID and VCS ID. The default value is Host ID.

For GUI users: When Version Manager obtains a user ID, the program can check the access control database to see if the user ID exists there. If the user ID does not exist, you can configure Version Manager to automatically create the user ID in the access control database and assign privileges to the user.

This is a useful feature for organizations that have not yet decided to use access control databases. If at some point the organization decides to enable access control, the users are already defined—thus, reducing the time it would take to set up security. Also, this is a simple way to allow guest accounts with restricted privileges.

User Ids can be either case-sensitive or case-insensitive; however, you cannot define duplicate user IDs that differ only in case. The directive that controls case sensitivity is CASE.

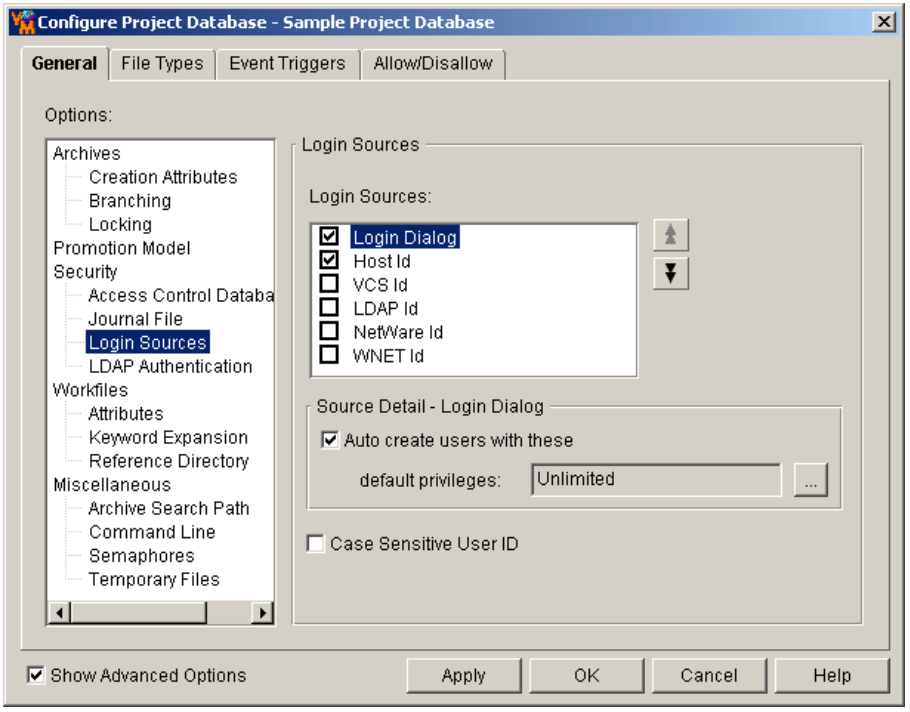
Using the GUI

Before you can set login sources, you must have a configuration file associated with the project database or project you want to configure. Use File | Properties to associate a configuration file with the selected project database or project.

To set these options in the GUI:

1. Select the project database or project for which you want to define login sources. See the *PVCS Version Manager Administrator's Guide* for more information about configuring project databases and projects.
2. Select Admin | Configure Project. The Configure Project dialog box appears.
3. If not already selected, select the **Show Advanced Options** check box.
4. Select **Login Sources** beneath Security. The Login Sources pane appears on the right. The values that display for each option are the settings that are currently defined in the

configuration file associated with the project database or project.



5 Select the appropriate login sources for your configuration.

By default, the Host Id login source is automatically defined by Version Manager in the master configuration file when you create a project database.

6 Use the up arrow and down arrow buttons to arrange the login sources in the correct order. Remember that the order you define here is the order in which Version Manager searches for user IDs.

7 To configure any of the login sources that you selected to automatically create user IDs in the access control database:

a Select the login source.

b Select the **Auto create users with these default privileges** check box. This option applies to project databases and projects.

c Specify the default privileges that will be assigned to the user. For more information about privileges, refer to the *PVCS Version Manager Administrator's Guide*.

By default, the Host Id login source automatically creates users in the access control database of a project database or project and assigns them the Unlimited privilege set.

8 To make user IDs case-sensitive, select the **Case Sensitive User ID** check box. By default, user IDs are **not** case-sensitive in the GUI.

9 Click OK if you are finished defining options, or click Apply to save these settings and continue to define other options.

Using the Command-Line Interfaces

The directives that define the login source options for the command line interface and project command line interface (PCLI) are:

- **LogIn**. Valid values are: HOST, LDAP (not supported in the CLI), NETWARE, VCSID, and WNET. HOST is the default for all platforms.
- **Case**. By default, user IDs are case-sensitive.

Refer to the *PVCS Version Manager Command-Line Reference Guide* for complete information about these directives.

Protecting Program Files and Project Data

Restrict access with network permissions

The sections below provide the recommended permissions for directories containing Version Manager executables, program files, and project data files. By limiting user rights in certain directories, you can ensure that these important files are not accidentally deleted or modified.

About Project Databases

A *project database* is a hierarchical representation of a group of projects, subprojects, and versioned files. A project database also stores the configuration settings for this entire collection of projects, subprojects, and versioned files.

On your operating or file system, a directory defined as a project database contains a variety of subdirectories and files, including project files, a pvcsuser directory, project directories, a lib directory, and possibly an archives and a work directory. You can change the default locations of the archive and work directories when you create the project database. However, if you do not change the default structure of a project database, the project database will be organized as follows:

```
project database\
                \archives
                \lib
                \project.prj
                \pvcsuser
                \work
```

These directories and files are important and should be protected. Refer to the next two sections, "Protecting Program Files and Project Data on UNIX" on page 69 and "Protecting Program Files and Project Data on Windows" on page 70 for more information about protecting this information.

Protecting Program Files and Project Data on UNIX

The *pvcs* user account should own all the files and directories listed in this table. Refer to "Default Installation Directory Structure" on page 51 for file locations.

Directories and Files	Owner Rights	Setuid Group Rights	Other Rights	Nonsetuid Group Rights
Program and security files /usr/pvcs/vm/<*os*>/bin	All	Read, Execute	Read, Execute	Read, Execute
Project database directory	All	Read, Execute	Read, Execute	All
Archives directory, if defined in a location other than the project database directory	All	Read, Execute	Read, Execute	All
Work directory, if defined in a location other than the project database directory	All	Read, Write, Execute	Read, Execute	All
Project database configuration file (master configuration file), typically stored at the root of the archives directory	All	Read	Read	All
Template (configuration and access control database) files: /usr/pvcs/vm/common/pvcsprop/pvcs/vm	All	Read, Execute	Read, Execute	All
Administrator files: /usr/pvcs/vm/<*os*>/bin/admin	Read, Write	Read, Write	None	None

NOTE For more information about defining security, refer to the *PVCS Version Manager Administrator's Guide*.

Special consideration

- If you are running Version Manager in the nonsetuid mode, then the project database and the project database configuration file will need write permissions for the group.
- The user *pvcs* should own all executables. When running in setuid mode, all executables located in the Version Manager bin directory must have the *setuid* bit set.

Protecting Program Files and Project Data on Windows

For more information about the location of Version Manager files, refer to "Default Installation Directory Structure" on page 34.

IMPORTANT! If you have installed Version Manager to a shared directory on a drive that uses the File Allocation Table (FAT) file system, all files and folders under the shared directory inherit the permissions that you assign to the directory.

Directories and Files	Default Location	User Rights	Admin Rights
Program and security files	PVCS\vm\Win32\bin	Read, Execute	All
Administrator files	PVCS\vm\Win32\bin\admin	None	All
Workstation setup files	PVCS\vm\workinst	Read, Execute	All
Project database directory	The location of a project database appears in the Project pane, after the name of the project database	Create Directory, Read, Write	All
Archives directory	Within the project database directory	Create Directory, Read, Write, Delete	All

Directories and Files	Default Location	User Rights	Admin Rights
Work directory	Within the project database directory	Create Directory, Read, Write	All
Project database configuration files	Within the Archives directory	Read	All
Template files (configuration and access control database)	PVCS\vm\common\ pvcsprop\pvcs\vm	Read, Execute	All

Setting Up Your UNIX Environment for Version Manager

Once you have installed Version Manager, you--or your UNIX administrator--must set up your UNIX environment before using Version Manager.

To set up environment variables for UNIX:

1 To enable use of the Version Manager command-line interface (CLI), you should source one of the Version Manager profile files that was generated during installation. Sourcing a profile file will add and/or modify environment variables in your current shell to enable use of the CLI.

Two profile files are available, `vmprofile` and `vmcshrc`. Which file you must use depends upon which shell you are running. These files are located in the `bin` directory below a

directory named after your operating system, as in: <*VM_Install_Directory*>/vm/<*OS*>/bin

For this shell…	Use this syntax…
C	`source <VM_Install_Directory>/vm/<os>/bin/vmcshrc`
Bash, Bourne, and Korn	`. <VM_Install_Directory>/vm/<os>/bin/vmprofile`

NOTE The period (.) acts as the "source" command in these shells, so the leading period and space are required.

Since a sourced profile does not persist between logins, you should consider adding the source command to your start up script (.cshrc or .profile). This saves you from having to manually run the source command every time you login into a shell from which you wish to use the CLI.

2 If you are using the graphical interface, follow this procedure to setup your environment:

a Make sure the DISPLAY environment variable is set to the host name or IP address of the system used to view Version Manager. If not automatically assigned, you can assign it as follows:

For this shell…	Use this syntax…
C	`setenv DISPLAY host_name:0.0` or `setenv DISPLAY ip_address:0.0`
Korn	`export DISPLAY=host_name:0.0` or `export DISPLAY=ip_address:0.0`

Bourne	`DISPLAY=host_name:0.0` or
	`DISPLAY=ip_address:0.0`
	`export DISPLAY`

b Edit the PATH environment variable in each user's start up script (*.cshrc* or *.profile*) as follows:

For this UNIX system…	Do this…
Solaris	Include the bin directory for OpenWindows in the PATH; for example, `$PATH:/usr/openwin/bin`
All others	Include the path to the X11R6 bin directory; for example, `$PATH:/usr/bin/X11`

c **For Solaris only:** You may need to set the environment variables OPENWINHOME, LD_LIBRARY_PATH, and XFILESEARCHPATH as indicated below.

For this shell …	Use this syntax …

C	`setenv OPENWINHOME` *`openwindows_directory`*
	`setenv LD_LIBRARY_PATH $OPENWINHOME/lib:$LD_LIBRARY_PATH`
	`setenv XFILESEARCHPATH $OPENWINHOME/lib/%T/%N/%S`

Korn or Bourne	`OPENWINHOME=`*`openwindows_directory`*
	`export OPENWINHOME`
	`LD_LIBRARY_PATH=$OPENWINHOME/lib`
	`export LD_LIBRARY_PATH`
	`XFILESEARCHPATH=$OPENWINHOME/lib/%T/%N/%S export XFILESEARCHPATH`

where *openwindows_directory* is the OpenWindows installation directory.

d If you are using an X Windows console to view Version Manager:

- In setuid mode and the console is physically connected to the system that is running Version Manager, then execute the command:

  ```
  xhost +local:
  ```

- Running on another UNIX system, then execute the command:

  ```
  xhost +
  ```

  From the UNIX system that is physically connected to the console.

This procedure is necessary to ensure that Version Manager has the ability to access your screen. Otherwise, the X Windows subsystem will report "Connection refused by server" messages similiar to the following example:

```
$ pvcsvmux
$ Xlib: connection to ":0.0" refused by server
Xlib: Client is not authorized to connect to
Server
Exception in thread "main"
java.lang.InternalError: Can't connect to X11
window server using ':0' as the value of the
DISPLAY variable.
```

Setting Up Adobe Acrobat Reader and HTML Browsers on UNIX

To access the help system and to view reports in an HTML browser, you must configure Version Manager with the path to an HTML browser. Refer to "Setting Up a Browser on UNIX" on page 77 for more information.

NOTE Linux and UNIX users must setup an HTML browser in order to access the Version Manager help system.

To view the PVCS Version Manager online (PDF) documentation, use Adobe® Acrobat® Reader, which is provided on your PVCS Series CD-ROM. Installing the PVCS Version Manager online documentation is an option when you install Version Manager.

You must set up Adobe Acrobat Reader by defining its location in Version Manager. For more information, refer to "Setting Up Adobe Acrobat Reader on UNIX" on page 75. Once you have set up Adobe Acrobat Reader, Version Manager launches it automatically when you select Help | Online Manuals.

Setting Up Adobe Acrobat Reader on UNIX

You must define the location of Adobe Acrobat Reader in Version Manager before you can access the online documentation. Adobe Acrobat Reader is provided on your PVCS Series CD-ROM.

To use the full-text search index that is provided with the online documentation, you must select the index file from within Adobe Acrobat Reader the first time you open the documentation.

Defining the Location of Adobe Acrobat Reader

To define the location of Adobe Acrobat Reader:

1 Start Version Manager.

2 Select View | Options.

3 Click the Applications tab.

4 In the **Adobe Acrobat Reader Location** field, enter the location of the Adobe Acrobat Reader executable.

5 Click OK.

Version Manager retains the location of Adobe Acrobat Reader and launches the application when you access the Version Manager online manuals. To access the online manuals from Version Manager, select Help | Online Manuals.

Defining the Search Index Location

A full-text search index is provided with the online documentation. The search index allows you to perform a full-text Boolean search across the entire online documentation set.

To successfully open the online manuals from the Adobe Acrobat Search dialog box, you may need to define the location of the index file (INDEX.PDX) the first time you use the search index.

To define the location of the search index:

1 In Adobe Acrobat Reader, display the Index Selection dialog box. The PVCS Version Manager Doc Set appears as an available index.

2 Click the Add button. The Add Index dialog box appears.

3 Under **Directories**, select the /books/vm/vmbooks directory in the Version Manager install directory.

4 Under **Files**, select INDEX.PDX.

5 Click the OK button.

6 In the Index Selection dialog box, make sure that the PVCS Version Manager Doc Set index is selected and then click OK. You can now perform full-text searches.

Setting Up a Browser on UNIX

To access the Version Manager help system and to view reports in an HTML browser, you must first define the location of the browser in Version Manager.

To define the location of a browser:

1. Start Version Manager.
2. Select View | Options.
3. Click the Applications tab to move it to the front.
4. In the **Browser Location** field, enter the path to the browser, such as `/usr/local/netscape/netscape`.
5. Click OK.

   When you generate a report, Version Manager automatically launches the report in the browser you specified. The browser is also launched whenever you invoke the Version Manager help system.

What's Next

See the *PVCS Version Manager Administrator's Guide* for information about setting up and configuring Version Manager. In addition, this manual provides instructions for defining security, event triggers, automatic branching, and more.

Part 3: Installing VM I-Net

Part 3: Installing VM I-Net contains the following chapters:

5 Introducing VM I-Net

In this Chapter

About VM I-Net

VM I-Net is a component of Version Manager that enables you to access Version Manager archives securely via the Internet or an intranet.

As part of the Internet functionality, VM I-Net provides several distinct features:

- **Enhanced Archive Security**—the client/server architecture of VM I-Net provides three layers of archive security: assigned user access rights, client/server protection, and standards-based encryption for public network access. By providing this layered security, VM I-Net protects your archives from unintentional updates or deletions.
- **Increased Performance**—by processing archives on the server, VM I-Net minimizes network traffic and decreases the amount of data sent to clients.
- **Thin and intuitive browser-based client interface**—VM I-Net provides a simplified interface to Version Manager through a web browser. When working remotely, you can use this thin client to check your files into and out of centrally located Version Manager archives.

VM I-Net Components

The combined services of the VM I-Net server component, your web server, and the VM I-Net client component enable you to manage your development process remotely, accessing your archives via the Internet or an intranet. These tools are described next.

VM I-Net Server

The VM I-Net server is the PVCS application that makes the services of Version Manager available remotely. You must install a supported web server and configure at least one servlet before you can use the VM I-Net server and VM I-Net client.

VM I-Net's client/server architecture enables you to access remote archives securely. In addition, VM I-Net improves upon the performance of the Version Manager GUI application; it minimizes network traffic and processes the data to remote clients faster.

Web Server

You must install a supported web server before you can use VM I-Net. VM I-Net is compatible with the following web server configurations:

Use this web server…	With this operating system…
Microsoft Internet Information Server 4.0	Windows NT
Microsoft Internet Information Server 5.0	Windows 2000
Apache 1.3.x	Solaris, HP-UX, AIX, Linux
iPlanet 4.1 SPx	Windows, Solaris, HP-UX, AIX
iPlanet 6.0	Windows, Solaris, HP-UX

NOTE For information on purchasing a web server, refer to the web server vendor's web site.

Although it might be possible for you to use other commercial web servers with the VM I-Net server, MERANT recommends these supported servers, which have been tested to work successfully with the VM I-Net server.

VM I-Net Client

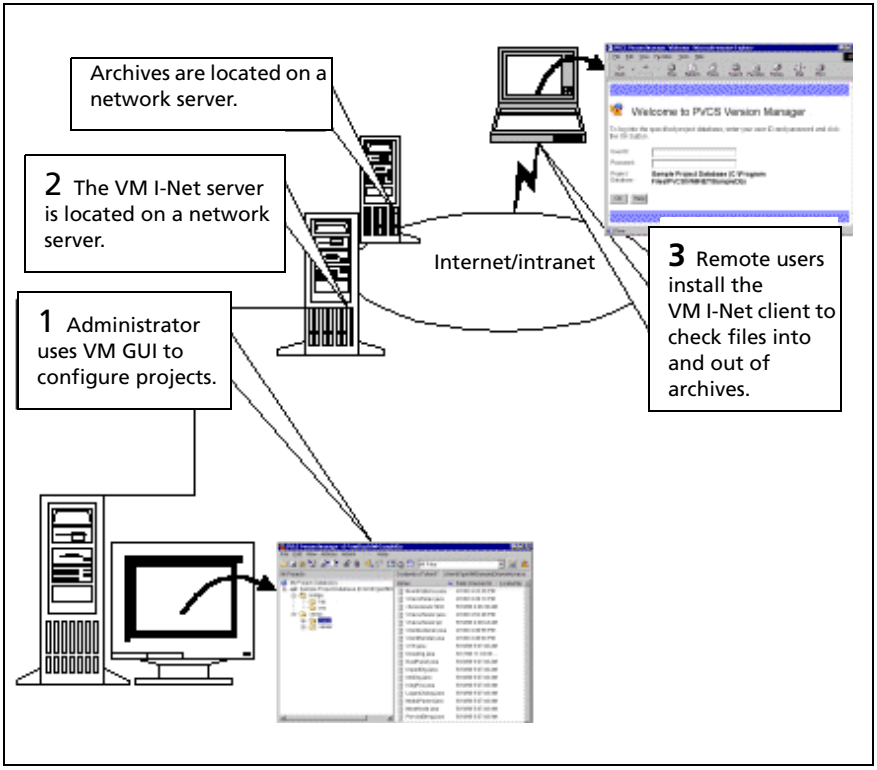
The VM I-Net client is a browser-based interface to the VM I-Net server that provides secure access to remote archives via the Internet or an intranet. The browser interface minimizes the amount of disk space required by VM I-Net, while providing access to the most commonly used tasks available through the Version Manager graphical user interface (GUI) or command-line interface. These tasks include checking revisions into and out of archives, locking revisions, creating version labels, and more.

NOTE For more information about VM I-Net, refer to the *PVCS VM I-Net User's Guide* or the VM I-Net online help. For more information about the Version Manager GUI, see the Version Manager documentation provided on the product CD-ROM.

VM I-Net does not provide access to administrative tasks, such as configuring project databases. For security reasons, you must use either the Version Manager GUI or command-line interface to perform these tasks. See "Working with Project Databases" on page 108 for more information.

How VM Components Are Integrated

The services and tools that make up the Internet/intranet functionality of Version Manager are integrated in layers, as shown in the next graphic. Refer to the numbered sections on the following pages for information corresponding to this graphic.



1. About the Administrator Setup

As an administrator, you use Version Manager to create or configure new or existing project databases and projects. You can work with these projects and project databases using either the Version Manager GUI or the Version Manager command-line interface. Project administration is performed using the Version Manager GUI and cannot be performed using VM I-Net.

2. About the Server Setup

You install the VM I-Net server on the system where you are running your web server. For more information about locating

project files, refer to "Network Topology Considerations" on page 152.

3. About the Client Setup

The VM I-Net client is a thin client component that requires minimal setup and administration. Users can download and install the VM I-Net client applet component when they first connect to the VM I-Net server. Once the applet component is installed, users do not need to perform any additional administration or maintenance tasks.

Use VM I-Net to check files into and out of archives. Use the Version Manager GUI or command-line interface to administer these archives. For more information, refer to the *PVCS VM I-Net User's Guide*.

Before You Install

Read the following information before installing VM I-Net or the web server.

Review the Readme File

Before you install VM I-Net, review the Version Manager readme file (readmevm.html) for late-breaking information. The last minute issues addressed in this file may not be found in any other Version Manager document.

System Requirements

VM I-Net is supported on Windows and UNIX operating systems. For specific supported platform, version information, and disk space requirements, refer to the readme file or select the Version Manager product link on http://www.merant.com/pvcs.

After You Install

Before you can connect to VM I-Net, you must download and install the VM I-Net client applet. See the *PVCS VM I-Net User's Guide* for instructions on using the AutoInstall feature to install the applet.

Configure the Web Browsers

The following sections describe additional configuration instructions for Netscape Communicator on UNIX and Microsoft Internet Explorer on Windows.

Using Netscape Communicator with UNIX

You can install the client applet on UNIX by doing one of the following:

- **Run the UNIX client install script.** You can install the client applet by running a script that is installed with the VM I-Net server. This procedure is described on page 88.
- **Use the AutoInstall feature.** This feature in Netscape Communicator is available with the versions we support on UNIX platforms. You can use the AutoInstall feature if you can log on and run Netscape as the owner of the Netscape

installation files or as root. See the *VM I-Net User's Guide* for instructions.

- **Manually install the applet.** If you cannot use the AutoInstall feature or run the script due to permissions or some other problem, then you should install the applet manually, as described on page 88, or get the owner of the Netscape directories to do so.

To install the client applet on Netscape via the script:

1. Log on as the user who originally installed Communicator. This may require the system administrator's help.
2. Change to the Client directory:

   `cd <VM_Install_Dir>/vm/inet/client`
3. Run the script:

   `unix_client_inst <Communicator_Install_Dir>`

   where <*Communicator_Install_Dir*> is the location where you installed Communicator.
4. Shut down and restart your browser.

To manually install the client applet on Netscape:

1. Log on as the user who originally installed Communicator. This may require the system administrator's help.
2. Change to the Client directory:

   `cd <VM_Install_Dir>/vm/inet/client`
3. Copy vmi660.jar to <*Communicator_Install_Dir*>`/java/classes`.

   NOTE You will need to create the classes directory if it does not exist yet.
4. Set the permissions on the file to r--r--r-- 444

Be sure that the owner and group match that of the Communicator install.

5 Find the platform-specific file that matches your UNIX platform (`libxfile_jri.<platform>`).

6 Copy the appropriate platform-specific file to the following directory. You will need to create the bin directory if it does not yet exist.

`<Nav_Install_Dir>/java/bin`

7 Rename the file as follows:

```
libxfile_jri.solaris --> libxfile_jri.so

libxfile_jri.aix     --> libxfile_jri.a

libxfile_jri.hpux    --> libxfile_jri.sl

libxfile_jri.linux   --> libxfile_jri.so
```

8 Set the permissions on the file to r-xr-xr-x 555

Be sure that the owner and group match that of the Communicator install.

9 Shut down and restart your browser.

Setting Up Microsoft Internet Explorer

1 From the **View** menu, select **Internet Options**.

2 On the **General** tab, click **Settings**.

3 Set **Check for newer versions of stored pages** to **Every visit to the page**.

4 Ensure you have the latest JVM patch.

6 Installing VM I-Net on Windows

In this Chapter

Overview of VM I-Net Installation on Windows

NOTE Before you install VM I-Net, review the system requirements specified in the readme file or go to http://www.merant.com/pvcs and select the Version Manager product link.

To set up VM I-Net in your Windows environment, perform the following steps:

1 **Install a Web Server.** Before you can install VM I-Net, you must install a supported web server as described in "Installing the Web Server Software" on page 130.

2 **Install VM I-Net.** To install VM I-Net components on your web server system, run the installation program, as described in "Running Setup on Windows" on page 93.

3 **Prepare Version Manager project databases.** If you do not have existing project databases, create and configure project databases using the Version Manager graphical user interface, following the considerations in Chapter 8, "Preparing Version Manager Project Databases," on page 107.

4 **Configure VM I-Net Servlets.** Configure a VM I-Net servlet for each Version Manager project database, as described in Chapter 9, "Configuring VM I-Net Servlets," on page 113.

5 **Start VM I-Net and the Web Server.** To start VM I-Net, follow the procedure given in Chapter 11, "Running VM I-Net," on page 137. To start the web server, follow the procedure given in Chapter 10, "Installing and Running the Web Server," on page 129.

6 **Install VM I-Net Client Component.** Users must install the VM I-Net client component on their system, as described in the *PVCS VM I-Net User's Guide*.

In addition to the installation steps above, you can also perform the following optional tasks:

- **Manage licenses.** VM I-Net allows you to view license information, set up license notification and upgrade evaluation licenses, as described in Chapter 12, "Managing Licenses," on page 141.
- **Manage security.** You can set up VM I-Net to work with the security features of your web server and your network, as described in Chapter 13, "Managing Security," on page 147.
- **Manage performance.** You can set up VM I-Net in your environment to optimize performance according to your network, system, web server and project configurations, as described in Chapter 14, "Managing Performance," on page 151.

Running Setup on Windows

To install VM I-Net on Windows, run the Setup program and follow the on-screen prompts. To allow you to complete the installation process, Setup automatically launches the VM I-Net Configuration utility.

When you install VM I-Net on Windows, the Setup program prompts you to provide a product serial number and license key. The number and the source of the number varies depending on whether you are installing an evaluation copy of the application,

a registered copy that you downloaded from the PVCS web site or a registered copy that you purchased on a CD-ROM:

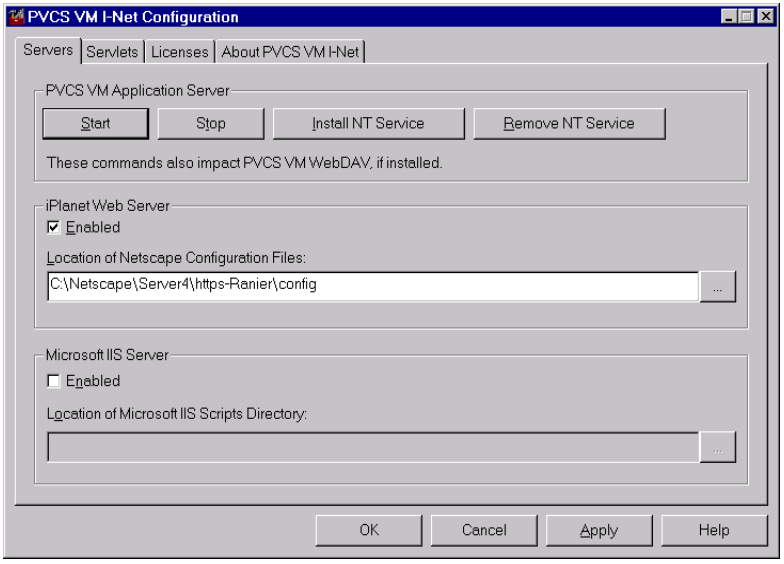
- If you purchased and downloaded the product via the World Wide Web, the serial number and key are located in your purchase information.
- If you purchased the product on a CD-ROM, the serial number and key are located on your product registration card.
- If you acquired an evaluation copy of the application, enter any whole decimal number when prompted for a product serial number, and when prompted for a license key, leave it blank.

To install VM I-Net on Windows:

1. Shut down any anti-virus utilities and any other open applications running on your system.
2. Shut down your web server as described in the documentation provided with your web server.
3. Follow steps 1 through 9 of the Version Manager installation procedure, as described in the section "Installing Version Manager from CD-ROM" on page 35.
4. When prompted to select the type of installation in the Setup Type window, select the **Web Server** option.
5. Select the **PVCS VM I-Net** option from the list of Version Manager components to install.
6. Follow the remaining prompts to complete installation.

   After Setup installs VM I-Net on your system, the program automatically launches the VM I-Net Configuration utility.

The Servers tab of the VM I-Net Configuration utility appears.



7 For a system with iPlanet Web Server installed, if the web server is autodetected, the VM I-Net Configuration utility automatically fills in the pertinent information.

Otherwise, in the iPlanet Web Server section of this screen, do the following:

a Check the **Enabled** check box.

b Click the Browse (...) button.

c Navigate to the location of the obj.conf file in the `\config` directory under:

`<iPlanet_Install_Dir>\https-<server_name>`

8 For a system with Microsoft Internet Information Server installed, if Microsoft Internet Information Server is autodetected, the VM I-Net Configuration utility automatically fills in the pertinent information. Otherwise, in

the Microsoft IIS Server section of this screen, do the following:

a Check the **Enabled** check box.

b Click the Browse (...) button.

c Navigate to the location of the scripts directory.

9 (Optional). To run the enabled servlets as a service providing virtually continuous, 24 x 7 access to VM I-Net, click Install NT Service. To subsequently stop running the servlet as an NT Service, click Remove NT Service.

NOTE Clicking either Install NT Service or Remove NT Service does not affect any currently running VM I-Net. Instead, the action takes affect the next time the machine starts up.

---

10 Click OK to apply your settings and close the VM I-Net Configuration utility.

11 Start the web server as described in the appropriate procedures under "Starting and Stopping a Web Server Instance" on page 132.

12 If you simply want to run VM I-Net with the default SampleDB project, go to Chapter 11, "Running VM I-Net," on page 137; otherwise, go to Chapter 8, "Preparing Version Manager Project Databases," on page 107.

Setting Virtual Web Directories

For Microsoft Internet Information Server, the VM I-Net installation automatically sets the virtual web directories and the ISAPI filter as part of the installation process.

If you need to know the exact virtual web directories and ISAPI filter that get set during installation, you can review the manual process described next.

To manually set the virtual web directories and the ISAPI filter:

1 Start the Microsoft Management Console:

- On Windows NT for IIS 4.0

  Select Start | Programs | Windows NT 4.0 Option Pack | Microsoft Internet Information Server | Internet Service Manager.

- On Windows 2000 for IIS 5.0

  Select Start | Settings | Control Panel | Administrative Tools | Computer Management | Services & Applications | Internet Information Services.

The Microsoft Management Console appears.

2 Right-click on Default Web Site and select Properties.

3 Select the ISAPI Filters tab.

4 Click Add.

The Filter Properties dialog box appears.

5 Enter `jakarta` in the **Filter Name** field.

6 Browse to the <*`VM_Install_Dir`*>`\vm\common\tomcat\bin\win32` directory and select the isapi_redirect.dll file.

7 Click OK as necessary to return to the Microsoft Management Console.

8 Create the vminet_temp virtual web directory:

a Right-click on Default Web Site and select New | Virtual Directory.

b Enter `vminet_temp` as the alias.

c Click Next.

d For the physical path, enter or browse to:

`<VM_Install_Dir>\vm\inet\temp\html`

e Click Next.

f Click Finish.

9 Create the vminet_images virtual directory:

a Right-click on Default Web Site and select New | Virtual Directory.

b Enter `vminet_images` as the alias.

c Click Next.

d For the physical path, enter or browse to:

`<VM_Install_Dir>\vm\common\tomcat\webapps\vminet\vminet_images`

e Click Next.

f Click Finish.

10 Create the vminet_books virtual directory:

a Right-click on Default Web Site and select New | Virtual Directory.

b Enter `vminet_books` as the alias.

c Click Next.

d For the physical path, enter or browse to:

`<VM_Install_Dir>\books\vm\vmbooks`

e Click Next.

f Click Finish.

11 Create the jakarta virtual directory:

a Right-click on Default Web Site and select New | Virtual Directory.

b Enter `jakarta` as the alias.

c Click Next.

d For the physical path, enter or browse to:

`<VM_Install_Dir>\vm\common\tomcat\bin\win32`

e Set Execute Permissions to Scripts & Executables.

f Click Next.

g Click Finish.

NOTE If the Windows folder options are set to exclude hidden or system files from view, you will not be able to browse and select the files listed in this procedure. In Windows Explorer, make sure folder options are set to "Show All Files".

---

12 Close the Microsoft Management Console.

13 (Optional). To run the enabled servlets as a service providing virtually continuous, 24 x 7 access to VM I-Net, click Install NT Service. To subsequently stop running the servlet as an NT Service, click Remove NT Service.

NOTE Clicking either Install NT Service or Remove NT Service does not affect any currently running VM I-Net server. Instead, the action takes affect the next time the VM I-Net server starts.

---

14 Click OK to apply your settings and close the VM I-Net Configuration utility.

15 Start the web server as described in the appropriate procedures under "Starting and Stopping a Web Server Instance" on page 132.

16 If you simply want to run VM I-Net with the default SampleDB project, go to Chapter 11, "Running VM I-Net," on page 137; otherwise, go to Chapter 8, "Preparing Version Manager Project Databases," on page 107.

7 Installing VM I-Net on UNIX

In this Chapter

Overview of VM I-Net Installation on UNIX

NOTE Before you install VM I-Net, review the system requirements specified in the readme file or go to http://www.merant.com/pvcs and select the Version Manager product link.

To set up VM I-Net in your UNIX environment, you must perform the following steps:

1. **Install Web Server.** Before you can run VM I-Net, you must install a supported web server as described in "Installing the Web Server Software" on page 130.
2. **Install VM I-Net.** To install VM I-Net on your web server system, run the installation program, as described in "Installing VM I-Net on UNIX" on page 103.
3. **Prepare Version Manager project databases.** If you do not have existing project databases, create and configure project databases using the Version Manager graphical user interface, following the considerations in Chapter 8, "Preparing Version Manager Project Databases," on page 107.
4. **Configure VM I-Net Servlets.** Configure a VM I-Net servlet for each Version Manager project database, as described in Chapter 9, "Configuring VM I-Net Servlets," on page 113.
5. **Install VM I-Net Client Component.** You must install the VM I-Net client component once for each web browser installation. See "Using Netscape Communicator with UNIX" on page 87.

In addition to the installation steps above, you can also perform the following optional tasks:

- **Manage licenses.** VM I-Net allows you to view license information, set up license notification and upgrade evaluation licenses, as described in Chapter 12, "Managing Licenses," on page 141.
- **Manage security.** You can set up VM I-Net to work with the security features of your web server and your network, as described in Chapter 13, "Managing Security," on page 147.
- **Manage performance.** You can set up VM I-Net in your environment to optimize performance according to your network, system, web server and project configurations, as described in Chapter 14, "Managing Performance," on page 151.

Installing VM I-Net on UNIX

To ensure that users have the appropriate permissions set to use both the Version Manager graphical user interface (GUI) and VM I-Net, follow these guidelines:

- If you are running Version Manager in setuid mode, install VM I-Net using the same user ID, in order to maintain permissions. (VM I-Net does not run in setuid mode.)
- If you are not running Version Manager in setuid mode, make sure that the VM I-Net Group ID is identical to the users' Group ID for Version Manager.
- Do not install VM I-Net as root.

Follow these web server guidelines:

- Be sure you have installed a supported web server.

- Know the directory in which you installed the web server. For example, if your web server is iPlanet and it is installed in `/opt/iplanet`, this is your web server's root directory. If you don't know the web server's root directory, ask your System Administrator.
- Configure your web server as described in its product documentation.
- For iPlanet, make sure that the VM I-Net user ID under which you are installing VM I-Net has read permissions to the web server's configuration directories and the obj.conf file in: `/<iPlanet_Install_Dir_>/https-<server_name>/config`

  where *<iPlanet_Install_Dir>* is the directory in which your web server is installed and *<server_name>* is the name of your https server.

Other guidelines:

- When planning to install more PVCS products, end the installation path with **PVCS** and use this as the installation root for all PVCS products.
- To install a licensed copy of VM I-Net, enter the serial number and IPE key provided with your software. To install an evaluation copy of VM I-Net, enter any whole decimal number for the serial number. Leave the IPE key field blank.

To install VM I-Net on UNIX:

1. Shut down the web server but leave the Administration Server running if using iPlanet.

   NOTE See the documentation provided with your web server for details on stopping the web server.

2. Verify that you have permission to the directory in which you are installing VM I-Net.

3 Follow steps 1 through 10 of the Version Manager installation procedure, as described in the section "Installing Version Manager from CD-ROM" on page 53.

4 Select the **PVCS Version Manager I-Net for UNIX** option from the list of Version Manager components to install.

5 Follow the remaining prompts to complete installation.

6 As the installation progresses, you will be asked which web server should be configured for use with VM I-Net. Press ENTER to accept the default or `N` to select a different web server.

Post-Installation Activities

If you chose to configure the iPlanet or Apache web server during installation, you must perform additional steps to complete the installation.

To complete the web server configuration:

1 Log in as root.

2 Make sure that the web server is stopped.

3 Do one of the following:

- For iPlanet:
  - **a** Back up the obj.conf file in `<iPlanet_Install_Dir>/https-<server name>/config`.
  - **b** Replace the obj.conf file with pvcs_iplanet_obj.conf from `<VM_Install_Dir>/vm/inet/install`.
- For Apache:
  - **a** Open the httpd.conf file from `<Apache_Install_Dir>/conf` and append the following line to the file:

```
include <VM_Install_Dir>/vm/inet/install/
httpd_pvcs.conf
```

b Save and close the http.conf file.

4 Reload the configuration file into the web server. See your web server documentation for instructions.

5 Start VM I-Net as described in "Running VM I-Net on UNIX" on page 139.

6 Restart the web server as described in "Starting and Stopping a Web Server Instance" on page 132.

7 To access the Sample Project, open your web browser and go to the following URL:

`http://<server_name>:<port>/vminet.html`

where `<server_name>:<port>` are what you specified when you configured the web server.

Using an Existing NFSMAP File

By default, an NFSMAP file is added to the `<VM_Install_Dir>/vm/common/bin/<os>` directory when VM I-Net is installed. However, you can use an existing NFSMAP file.

To use an existing NFSMAP file:

Replace the NFSMAP file from the following directory with a link to your existing NFSMAP file:

`<VM_Install_Dir>/vm/common/bin/<os>`

8 Preparing Version Manager Project Databases

In this Chapter

About VM I-Net and Project Databases

VM I-Net is designed to work with existing Version Manager projects. If you do not have existing project databases in your environment, create and configure them using the Version Manager graphical user interface. You must create and configure project databases before you use VM I-Net.

Once you have installed VM I-Net, you can gain access to newly configured project databases as needed, without reinstalling VM I-Net.

For more information on creating and configuring project databases, see the *PVCS Version Manager Administrator's Guide*.

Working with Project Databases

A *project database* is a special kind of project data file that contains general information about a group of related projects. This information includes project and folder names, and the locations of archive directories, workfile directories and configuration files. Project databases are stored with other project data files in a directory you specify using the Version Manager graphical user interface.

When you configure VM I-Net, you must specify the location of the project database you want to access with the VM I-Net interface.

Setting Up New Project Databases

If you are preparing new project databases for use with VM I-Net, you can accept the default locations the Version Manager graphical user interface uses to store the project database, or you can choose a new location.

Using Existing Project Databases

VM I-Net works with project databases created with Version Manager. You can use the VM I-Net interface with these project databases and the versioned files contained within them.

If you want to use existing project databases with VM I-Net, you do not need to perform any additional administrative tasks. However, you must know the location of the project databases before you can configure the servlets.

When working with project databases accessed by both VM I-Net and Version Manager, be aware that the user name and password that you use in VM I-Net might not be the same user name and password that you use in the Version Manager GUI. To streamline the login process, set up an access control database containing the names and passwords of all users who are accessing the project database using the VM I-Net interface, the Version Manager GUI, or the command-line interface. The same access control database can be used for all Version Manager interfaces. See "Working with Users and Permissions" on page 110 for more information.

Removing Project Databases

Remove a project database from VM I-Net by removing the corresponding servlet. Refer to Chapter 9, "Removing Servlets on Windows," on page 122, or Chapter 9, "Removing Servlets on UNIX," on page 127 for more information.

Configuring Project Databases

Project database configuration options affect the behavior of VM I-Net, just as they affect the behavior of other Version Manager components. For example, if you modify permission settings in order to prevent users from labeling revisions, the corresponding buttons will be disabled in the VM I-Net interface for those same users.

NOTE VM I-Net respects all the configuration settings defined in the graphical user interface, with the exception of settings for event triggers. Event triggers are launched on the web server system, rather than on the client system. This is an exception to the event trigger behavior used by other components of Version Manager.

Working with Users and Permissions

VM I-Net provides two ways of setting up users and permissions for use with the VM I-Net interface: *access control* and *VM I-Net user names*.

Using Access Control

Access control is a Version Manager feature that allows you to control the way users gain access to Version Manager project databases. Using this feature, you define users and user groups and then assign permission settings for each user you defined.

You set up access control using the Version Manager graphical user interface. Once you have set up access control, VM I-Net uses the user names and passwords you defined to control access to

project databases at login. In addition, VM I-Net respects the permissions settings you have set for each user regarding access to specific features and specific archives. Therefore, users must use the same user name as defined in the access control database when they log into the Version Manager GUI and VM I-Net.

When you set up the access control database to include user names but not associated passwords, be aware that the default password mask is used as described in "Using Default Passwords" on page 112. In essence, the default password mask allows you to specify a pattern in which the user name for VM I-Net is manipulated to construct the corresponding password.

Implement access control for all project databases you want to configure for use outside the network firewall.

VM I-Net User Names

If you do not want to implement access control for your project databases, you can use the user name and password feature of VM I-Net. This feature is an option designed for project databases that do not require a high degree of security.

Using VM I-Net user names allows users to create their own user names when they log into VM I-Net and to use the default password feature, as described in "Using Default Passwords" below, for password protection.

For more information on creating users, see the *PVCS Version Manager Administrator's Guide*.

Using Default Passwords

The default password feature allows you to specify a default password mask for users of VM I-Net. The default password mask is the pattern VM I-Net uses to derive a password from a user name. Be aware that even though you specify a default password mask, the users of VM I-Net can modify their passwords. If you have access control on the project database, the modified password will also be required in the Version Manager GUI.

You set up VM I-Net to support default passwords by setting the Default Password Mask property when you configure VM I-Net. The default value for the password mask is !{0}, where {0} is the user's user ID. For example, for the user *johnd*, the default password would be *!johnd*.

For more information on defining the default password mask, see "VM I-Net Servlet Configuration Settings" on page 114.

9 Configuring VM I-Net Servlets

In this Chapter

About VM I-Net Servlets

VM I-Net servlets are *Java servlets* that form the server-side component of VM I-Net. A Java servlet is a special type of Java object designed to extend the functionality of a web server. You install the Java classes that make up the servlets when you install VM I-Net on the web server system.

VM I-Net servlets are automatically loaded when a user opens the servlet's universal resource locator (URL) to log into a project database. You define the servlet's URL when you add a new servlet to a web server, using either the VM I-Net Configuration utility (for Windows), or using a UNIX text editor to modify the web.xml file (for UNIX). Once a servlet has been loaded, it remains active while the web server is running.

VM I-Net Servlet Configuration Settings

This section contains information on servlet configuration settings you define when you add or modify a servlet.

Step-by-step instructions for specifying these settings in Windows begin on page 119. The step-by-step instructions for specifying them in UNIX begin on page 123.

Servlet Name

The *servlet name* is the name the web server uses to identify the servlet. This name appears in the VM I-Net interface when a user connects to VM I-Net using the Project Databases page.

For UNIX, you set the *servlet-name* configuration argument in the web.xml file.

Description

The servlet *description* is a text description that describes the projects in the project database associated with the servlet. This text appears in the VM I-Net interface when a user connects to VM I-Net using the Project Databases page (vminet.html). For UNIX, you set the *servlet-description* configuration argument in the web.xml file.

Servlet URL

The *servlet URL* is the relative Universal Resource Locator of the servlet. The full URL of the servlet is derived from the host name of the web sever and the servlet URL that you choose; for example, in the URL:

```
http://<server_name>:<port>/MyServlet
```

MyServlet is the servlet URL. When users connect to a VM I-Net servlet, the users open the fully qualified URL as shown above.

For UNIX, you set the *url-pattern* configuration argument in the web.xml file.

Project Database or Root (Windows) or rootPath (UNIX)

A *project database or project root* contains a data file (pvcsproj.pub) managed by Version Manager. This file stores general information about a group of related projects. This information includes the names of the projects in the group, and the locations of configuration files, archive directories and workfile directories.

In Windows, you set the project database servlet attribute with the VM I-Net Configuration utility. For UNIX, you set the *rootPath* configuration argument in the web.xml file.

You specify the *project database* or *rootPath* setting to be associated with a servlet. Once you add the servlet, all the projects in the *project database/rootPath* are enabled for use with VM I-Net. Each servlet may be associated with a single *project database/rootPath*.

Server (Windows) or serverName (UNIX)

The *Server* or *serverName* configuration setting allows you to specify whether you want VM I-Net to use the name of your web server or your web server's numeric IP address when generating links within a project database. If the web server uses dynamically allocated IP addresses, you may want to specify the server name setting.

For UNIX, you set the *serverName* configuration argument in the web.xml file.

PVCS Tracker I-Net URL (Windows) or trackerName (UNIX)

The *PVCS Tracker I-Net URL* or *trackerName* setting is the URL of a related Tracker project that you have enabled for use with Tracker I-Net. Clicking on the Tracker I-Net button brings up this URL in a new web browser window.

For UNIX, you set the *trackerName* configuration argument in the web.xml file.

Default Password (Windows) or defaultPassword (UNIX)

The default password setting allows you to specify a default password mask for users of VM I-Net. The default password mask is the pattern VM I-Net uses to derive a password from a user name.

You can use the default password feature with the following kinds of projects:

- Projects that use VM I-Net user names for user identification.
- Projects that use the access control database for user identification, but contain user names without associated passwords.

The default value for the password mask is !{0}, where {0} is the user's user ID. For example, for the user *johnd*, the default password would be *!johnd*. However, you can specify any password mask you wish, specifying the {0} string as a replacement for the user ID.

NOTE Only use the {0} construction in its entirety; braces are not supported for use in any other manner.

For UNIX, you set the *defaultPassword* configuration argument in the web.xml file.

Login Time-out (Windows) or logtimeout (UNIX)

The *Login Time-out* (for Windows) or the *logtimeout* (for UNIX) configuration setting allows you to specify the maximum number of minutes a VM I-Net user can be idle without VM I-Net terminating the login session. Once a login session has been terminated, users must re-log into a project database. The *Login Time-out* or *logtimeout* setting is the global setting for all users of the servlet. If you do not specify a login time-out, VM I-Net will not log out idle users.

For UNIX, you set the *logtimeout* configuration argument in the web.xml file.

Date/Time Format (Windows) or DateTimeFormat (UNIX)

The *Date/Time Format* (for Windows) or *DateTimeFormat* (for UNIX) configuration setting allows you to specify the date and time format to be used by the servlet when displaying dates and times. The standard formats are mm/dd/yyyy for the date and HH:mm:ss for the time. If not specified, the default Java Date/Time format is used.

For UNIX, you set the *DateTimeFormat* configuration argument in the web.xml file.

Configuring Servlets on Windows

When you install VM I-Net on Windows, you use the VM I-Net Configuration utility to add and configure servlets. You can then gain access to your project databases using these servlets.

Starting the VM I-Net Configuration Utility on Windows

Launch the VM I-Net Configuration utility when you want to make changes to your VM I-Net configuration. By default, the VM I-Net Configuration utility is run by selecting Start | Programs | PVCS Version Manager | PVCS VM I-Net | PVCS VM I-Net Configuration Utility. However, if you specified another program group name during installation, be sure to navigate through that program group to locate the VM I-Net Configuration utility.

Adding Servlets on Windows

Adding a VM I-Net servlet requires you to specify servlet configuration options, such as the servlet name, the servlet URL and the project database you want to enable for use with VM I-Net.

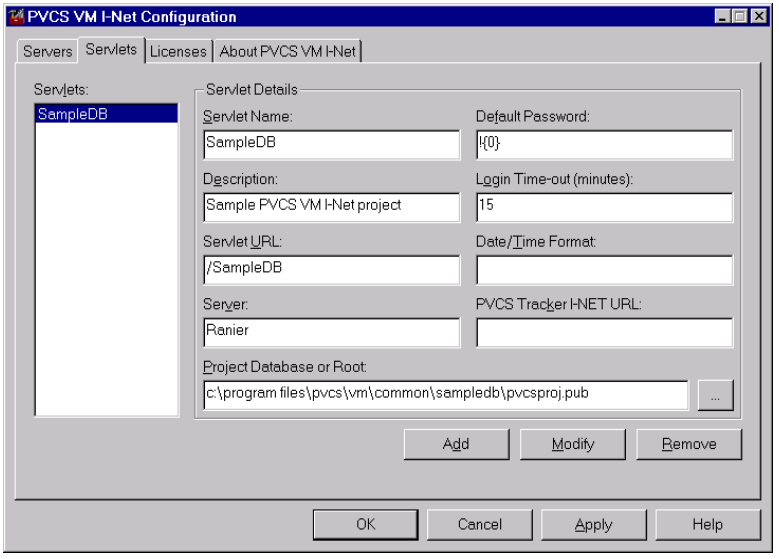
After you add a servlet, you must apply the changes in your web server, restart the web server, and restart VM I-Net before the changes take effect.

To add a servlet:

1 Start the VM I-Net Configuration utility.

2 Select the Servlets tab.

The Servlet tab of the VM I-Net Configuration utility appears.



3 Enter a name for the servlet in the **Servlet Name** field.

4 (Optional). Enter a description for the servlet in the **Description** field.

5 Enter a URL for the servlet in the **Servlet URL** field. The entered URL must begin with the / character, such as in /SampleDB.

6 Enter the name or IP address of the Server in the **Server** field.

7 Enter the name and path of the project database or project root you want to associate with the servlet in the **Project Database or Root** field. If you don't know the name or path of the project database, click the Browse button [...] and navigate to the desired project database.

   The default project database file is named pvcsproj.pub.

8 (Optional). Enter a default password mask in the **Default Password** field. If you don't want to require password use, leave this field blank.

The default value for this field is !{0}, where {0} is substituted for each user's ID.

NOTE Only use the {0} construction in its entirety; braces are not supported for use in any other manner.

---

9 Enter a logout time in minutes in the **Login Time-out** field.

The default value for this field is 15 minutes. If you do not specify a logout time, VM I-Net will not log out idle users.

10 Enter the date and time format to be used by the servlet in the **Date/Time Format** field. The standard formats are mm/dd/yyyy for the date and hh:mm:ss for the time. If not specified, the default Java Date/Time format is used.

11 (Optional). If you want to associate the servlet with a Tracker I-Net project, enter the full URL of the project in the **PVCS Tracker I-Net URL** field:
`http://<server_name>/<Tracker_project>`

12 Click Add.

13 Click Apply to apply the changes, or click OK to apply the changes and exit the program.

14 Stop and then restart VM I-Net as described in "Running VM I-Net on Windows" on page 138.

15 Restart the web server as described in "Starting and Stopping a Web Server Instance" on page 132.

Modifying Servlets on Windows

You can modify a VM I-Net servlet to change any of its associated configuration settings. After you have modified a servlet, apply the changes so that they take effect.

To modify a servlet:

1. Start the VM I-Net Configuration utility.
2. Select the Servlets tab. The servlet configuration view appears.
3. Select the servlet you want to modify from the Servlets list.
4. Edit any of the properties associated with the servlet.
5. Click Modify.
6. Click Apply to apply the changes, or click OK to apply the changes and exit the program.
7. Stop and restart VM I-Net as described in "Running VM I-Net on Windows" on page 138.
8. Restart the web server as described in "Starting and Stopping a Web Server Instance" on page 132.

Removing Servlets on Windows

Removing a VM I-Net servlet removes the servlet and its associated settings from the system. Apply the changes for the servlet removal to take effect.

NOTE Once you remove a servlet, it cannot be restored (that is, no "undo" command is available). To restore the servlet, you must recreate it from the beginning.

To remove a servlet:

1. Start the VM I-Net Configuration utility.
2. Select the Servlets tab. The Servlet tab of the VM I-Net Configuration utility appears.
3. Select the servlet you want to remove from the Servlets list.
4. Click Remove.
5. Click Apply to apply the changes, or click OK to apply the changes and exit the program.
6. Stop and restart VM I-Net as described in "Running VM I-Net on Windows" on page 138.
7. Restart the web server as described in "Starting and Stopping a Web Server Instance" on page 132.

Configuring VM I-Net Servlets on UNIX

Before you can access a servlet using VM I-Net, you must define the path of the servlet's project database by configuring the servlet. Optionally, you can also modify a servlet's default configuration values.

For more information about servlet configuration settings, refer to "VM I-Net Servlet Configuration Settings" on page 114.

Adding Servlets on UNIX

To add a servlet on UNIX:

1 Open the web.xml file located in the following directory: `<VM_Install_Dir>/vm/common/tomcat/webapps/vminet/WEB-INF`

2 Add the following lines before the first `<!-- End PVCS section -->` line in the file, changing the values shown in bold for the new servlet:

```
<servlet>
<servlet-name> New_Servlet </servlet-name> <servlet-class>
pvcs.vm.servlet.VmServlet </servlet-class> <load-on-startup> 0 </load-on-
startup> <servlet-description> Sample New_Servlet Description </servlet-
description>
<init-param> <param-name> rootPath </param-name> <param-value> /usr/pvcs/
vminet/New_Servlet </param-value> </init-param>
<init-param> <param-name> serverName </param-name> <param-value> server
</param-value> </init-param>
</servlet>
```

NOTE See "VM I-Net Servlet Configuration Settings" on page 114 for details on servlet-name, servlet-description, rootPath, and serverName.

3 To modify the servlet's configuration options, add the following lines to the servlet entry above (before the `</servlet>` tag) and change the values shown in bold:

```
<init-param> <param-name> logtimeout </param-name> <param-value> 15
</param-value> </init-param>
<init-param> <param-name> DateTimeFormat </param-name> <param-value>
</param-value> </init-param>
<init-param> <param-name> defaultPassword </param-name> <param-value>
!{0} </param-value> </init-param>
<init-param> <param-name> trackerName </param-name> <param-value> http://
trackserver/trackbin/wtms.dll </param-value> </init-param>
```

NOTE See "VM I-Net Servlet Configuration Settings" on page 114 for details on logtimeout, DateTimeFormat, defaultPassword, and trackerName.

4 Add the following lines before the second `<!-- End PVCS section -->` line in the file, changing the values shown in bold to the new servlet name:

```
<servlet-mapping>
<servlet-name> New_Servlet </servlet-name> <url-pattern> /New_Servlet/*
</url-pattern>
</servlet-mapping>
<servlet-mapping>
<servlet-name> New_Servlet </servlet-name> <url-pattern> /New_Servlet
</url-pattern>
</servlet-mapping>
```

5 Save and close the web.xml file.

6 If you are using iPlanet, complete the steps in "Defining Servlets on iPlanet", below. If you are using Apache, complete the steps in "Defining Servlets on Apache" on page 126.

7 Stop and restart VM I-Net as described in "Running VM I-Net on UNIX" on page 139.

8 Stop and restart the web server as described in "Starting and Stopping a Web Server Instance" on page 132.

Once a servlet is added, you can access it through a URL in VM I-Net.

Defining Servlets on iPlanet

If you are using iPlanet, you must also specify any new servlets in the iPlanet configuration file, in addition to the web.xml file.

To add a servlet on iPlanet:

1 Log in as root.

2 Open the obj.conf file located in the following directory: `<iPlanet_Install_Dir>/https-<server_name>/config`

3 Add the following lines after the <Object name=default> line, substituting your servlet name for the values in bold:

```
NameTrans fn="assign-name" from="/New_Servlet" name=vmservlet
NameTrans fn="assign-name" from="/New_Servlet/*" name=vmservlet
```

NOTE The values you specify here must match the servlet-name value you specified in the web.xml file.

4 Save and close the obj.conf file.

5 Stop and restart VM I-Net as described in "Running VM I-Net on UNIX" on page 139.

6 Stop and restart the web server as described in "Starting and Stopping a Web Server Instance" on page 132.

Defining Servlets on Apache

If you are using Apache, you must also specify any new servlets in the Apache configuration file, in addition to the web.xml file.

To add a servlet on Apache:

1 Log in as the user who installed VM I-Net.

2 Open the httpd_pvcs.conf file located in the following directory:
<*VM_Install_Dir*>/vm/inet/install

3 Add the following lines before the </IfModule> line, substituting your servlet name for the values in bold:

```
JkMount /New_Servlet ajp12
JkMount /New_Servlet/* ajp12
```

NOTE The values you specify here must match the servlet-name value you specified in the web.xml file.

4 Save and close the httpd_pvcs.conf file.

5 Stop and restart VM I-Net as described in "Running VM I-Net on UNIX" on page 139.

6 Stop and restart the web server as described in "Starting and Stopping a Web Server Instance" on page 132

Modifying Servlet Configuration Settings on UNIX

To change the settings for an existing servlet:

1 Open the web.xml file located in the following directory: `<VM_Install_Dir>/vm/common/tomcat/webapps/vminet/WEB-INF`

2 Locate the servlet entry and edit the desired values. Refer to "VM I-Net Servlet Configuration Settings" on page 114 for descriptions of the settings.

3 Save and close the web.xml file.

4 Stop and restart VM I-Net as described in "Running VM I-Net on UNIX" on page 139.

5 Stop and then restart the web server as described in "Starting and Stopping a Web Server Instance" on page 132.

NOTE The changes only take effect after the web server and VM I-Net are restarted.

Removing Servlets on UNIX

To remove an existing servlet:

1 Open the web.xml file located in the following directory: `<VM_Install_Dir>/vm/common/tomcat/webapps/vminet/WEB-INF`

2 Remove the servlet entry associated with the servlet to be deleted.

Alternatively, you can comment out the servlet entry. To comment out the servlet entry, add the following characters before and after the servlet tags:

```
<!-- <servlet>...</servlet> -->
```

3 Save and close the web.xml file.

4 Stop and restart VM I-Net as described in "Running VM I-Net on UNIX" on page 139.

5 Stop and then restart the web server as described in "Starting and Stopping a Web Server Instance" on page 132.

NOTE The changes only take effect after the web server and VM I-Net are restarted.

Accessing Servlets

Once you have added a servlet to VM I-Net, you can access the servlet as projects in VM I-Net from several locations:

- VM I-Net Project Database page:

  A link to the servlet appears on this page once you have added the servlet successfully. To access this page, enter the URL:
  `http://<server_name>:<port>/vminet.html`

- Servlet URL:

  Access the servlet directly by entering its URL:
  `http://<server_name>:<port>/<servlet_URL>`

10 Installing and Running the Web Server

In this Chapter

Installing the Web Server Software

1. Verify that the system complies with the requirements specified in the readme file or on the Merant PVCS Web site at http://www.merant.com/pvcs (select the Version Manager product link).
2. Obtain a supported web server program from a software retailer or download it from the manufacturer's web site on a purchase or trial basis.
3. (Optional). Review the performance information in Chapter 14, "Managing Performance," on page 151 before you select a host system for the web server.
4. Follow the instructions in the web server's documentation for installing the web server.

Configuring the Web Server Software

After you have installed the web server software, you can configure it according to the needs of your environment. Configuration options include basic settings such as server name and port number, and advanced options for security and performance tuning.

Although you can run the web server software with VM I-Net using default configuration settings, you may make changes to the configuration in order to enable security or to optimize the performance of VM I-Net in your environment.

The following describes some typical default configuration settings for web servers:

- **Server name:** This is the name of the system where you install the web server and the VM I-Net servlets. By default this is

your machine and domain name. If the server has a DNS alias established for it, you can use the alias as the server name.

- **Port:** This can be any supported port number not currently in use. By default, the standard HTTP port number is 80; the standard HTTPS port number is 443. When you set the port number to 80, you need not specify the *<port>* variable when specifying the server's URL.

See the documentation provided with the web server software for instructions on configuring it for use.

Setting Up Web Server Security

Web server security controls how users gain access to resources hosted on the web server, including VM I-Net. With VM I-Net, web server security plays an essential role in protecting the information in Version Manager project databases from unauthorized users. MERANT recommends that you enable web server security for all installations where project data or archives are exposed to users outside the firewall.

Web servers offer two security features: *access control* and *secure socket layers*. Access control provides basic user name and password protection. Secure socket layers is a more sophisticated feature that provides encryption, data integrity protection and authentication using public key certificates. Enabling secure socket layers requires you to perform additional configuration steps when you set up VM I-Net.

For more information on setting up web server security for use with VM I-Net, see Chapter 13, "Managing Security," on page 147.

Starting and Stopping a Web Server Instance

How you start a web server instance varies according to the web server software you are using. Locate the instructions for your web server in the following sections.

Starting and Stopping a Web Server in iPlanet Web Server

These procedures apply when using iPlanet Web Server, regardless of the platform on which VM I-Net is installed.

First-time Startup After Installation

Use this procedure to start a web server instance the first time after installation.

1. Verify that you have Administrator permission to the web server's Administration Server.
2. Log in to the web server's Administration Server.
3. Click the button with the name of a server for which you installed VM I-Net.

   For example, if you named the server VMINET, click the VMINET button.
4. Click OK in the dialog box that appears.
5. Click the Apply button at the top of the web server's Administration Server.
6. Click Load Configuration Files in the Apply Changes page.
7. When the Success dialog box appears, click OK.

8 Click Server ON to turn on the web server instance.

9 When the Success dialog box appears, click OK.

Subsequent Startup

Use this procedure to subsequently start a web server instance that has previously been stopped.

1 Verify that you have Administrator permission to the web server's Administration Server.

2 Log in to the web server's Administration Server.

3 Click the button with the name of a server for which you installed VM I-Net.

   For example, if you named the server VMINET, click the VMINET button.

4 Click Server ON to turn on the web server instance.

5 When the Success dialog box appears, click OK.

Stopping a Web Server

1 Verify that you have Administrator permission to the web server's Administration Server.

2 Log in to the web server's Administration Server.

3 Click the button with the name of a server for which you installed VM I-Net.

   For example, if you named the server VMINET, click the VMINET button.

4 Click OK in the dialog box that appears.

5 Click Server OFF to turn off the web server instance.

6 When the Success dialog box appears, click OK.

Starting and Stopping a Microsoft Internet Information Server

These procedures only apply when using Microsoft Internet Information Server on the Windows platform.

Starting a Web Server in Microsoft Internet Information Server

Use this procedure to start a web server instance in Microsoft Internet Information Server on Windows.

1 Do one of the following:

- On Windows NT:

  Select Start | Settings | Control Panel and double-click Services.

- On Windows 2000:

  Select Start | Settings | Control Panel and double-click Administrative Tools, and then double-click Services.

2 Select **World Wide Web Publishing Service** in the Service list.

3 Click Start.

4 Click Close.

Stopping a Web Server in Microsoft Internet Information Server

Use this procedure to stop a web server instance in Microsoft Internet Information Server on Windows.

1 Do one of the following:

- On Windows NT:

  Select Start | Settings | Control Panel and double-click Services.

- On Windows 2000:

  Select Start | Settings | Control Panel and double-click Administrative Tools, and then double-click Services.

2 Select **World Wide Web Publishing Service** in the Service list.

3 Click Stop.

4 Click Yes when prompted to confirm.

5 Click Close.

Starting and Stopping Apache Web Server

These procedures only apply when using Apache Web Server on UNIX.

Starting Apache

Use this procedure to start a web server instance in Apache.

1 Log in as root.

2 Change directory to <*Apache_Install_Dir*>/bin, where <*Apache_Install_Dir*> is the location of the Apache installation.

3 Enter `./apachectl start`

Stopping Apache

Use this procedure to stop a web server instance in Apache.

1 Log in as root.

2 Change directory to <*Apache_Install_Dir*>/bin, where <*Apache_Install_Dir*> is the location of the Apache installation.

3 Enter `./apachectl stop`

11 Running VM I-Net

In this Chapter

Running VM I-Net on Windows

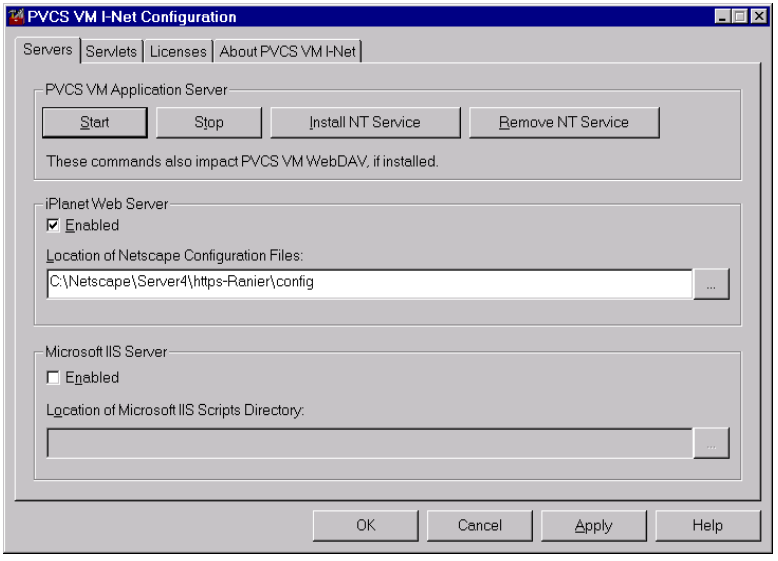
Once you have started VM I-Net, it will continue to run until you shut it down manually or shut down the machine on which it is installed.

To start or stop VM I-Net on Windows:

1 Launch the VM I-Net Configuration utility. By default, the VM I-Net Configuration utility is run by selecting Start | Programs | PVCS Version Manager | PVCS VM I-Net | PVCS VM I-Net Configuration Utility.

2 Click the Servers tab.

The Servers tab of the VM I-Net Configuration utility appears.



3 Click the desired button to start or stop the PVCS VM Application Server, which starts or stops VM I-Net as well as WebDAV Server, if installed.

4 Click OK to exit the VM I-Net Configuration utility.

Running VM I-Net on UNIX

Once you have started VM I-Net, it will continue to run until you shut it down manually or shut down the machine on which it is installed.

Special considerations

- Start and stop VM I-Net as the user who owns the Project Databases. Do not run as root.
- WebDAV Server and VM I-Net both use the PVCS VM Application Server. If you start or stop one feature, then the other feature automatically starts or stops.

To start VM I-Net on UNIX:

1. Change to the following directory:
   `cd /<VM_Install_Dir>/vm/common/bin`
2. Start VM I-Net by typing:
   `./pvcsstart.sh`
3. Check for the following message:
   `PVCS VM I-Net n.n Build (Build Number)`

To stop VM I-Net on UNIX:

1. Change to the following directory:
   `cd /<VM_Install_Dir>/vm/common/bin`
2. Stop VM I-Net by typing:
   `./pvcsstop.sh`

Connecting Users

After you have installed and configured the web server and have started VM I-Net, you can start the application and connect users to project databases.

To connect users to VM I-Net, instruct them to open the following URL in a supported web browser:

`http://<server_name>:<port>/vminet.html`

where <*server_name*> is the name of your web server and <*port*> is your web server port number.

The first time a user connects to VM I-Net, the user must download and install the VM I-Net client applet, as described in the *PVCS VM I-Net User's Guide*. To install the client applet on UNIX, see "Using Netscape Communicator with UNIX" on page 87.

12 Managing Licenses

In this Chapter

Viewing License Information on Windows

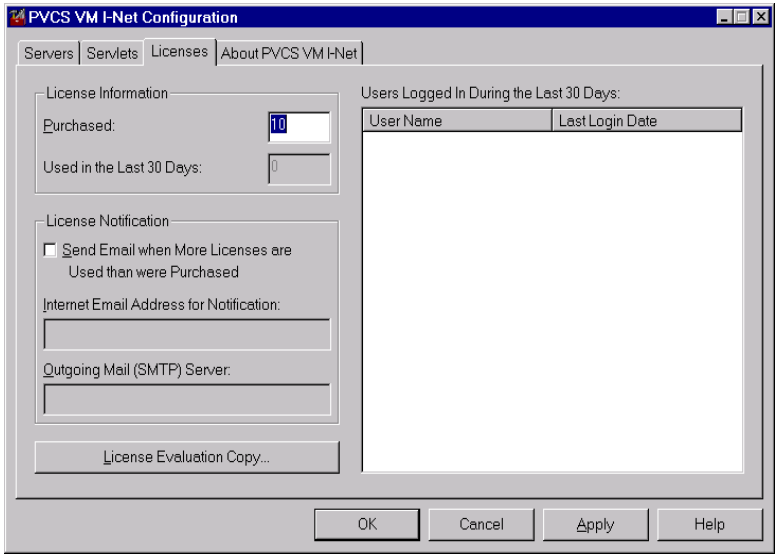
If you are running VM I-Net on Windows, use the VM I-Net Configuration utility to view information on the number of licenses used in the last 30 days and on users and dates of user logins.

To view license information:

1 Start the VM I-Net Configuration utility.

2 Select the Licenses tab.

The Licenses tab of the VM I-Net Configuration utility appears.



3 Use the Used in the Last 30 Days field to view the number of licenses used in the last 30 days.

4 Use the right pane of the licenses view to view information about users and dates of login.

Setting Up License Notification on Windows

If you are running VM I-Net on Windows, use the VM I-Net Configuration utility to set up license notification. License notification allows VM I-Net to e-mail you when the number of users has exceeded the number of purchased licenses.

To set up license notification on Windows:

1. Start the VM I-Net Configuration utility.
2. Select the Licenses tab.
3. Enter the number of licenses you purchased in the **Purchased** field. The default is 10.
4. Select *Send Email when More Licenses are Used than were Purchased* from the License Notification options.
5. Enter your e-mail address in the **Internet Email Address for Notification** field.
6. Enter the name of your SMTP Server in the **Outgoing Mail (SMTP) Server** field.
7. Click Apply to apply the changes or click OK to apply the changes and exit the program.

Setting up License Notification on UNIX

License notification allows VM I-Net to e-mail you when the number of VM I-Net users has exceeded the number of purchased licenses.

To set up license notification on UNIX:

1 Navigate to the directory:

`<VM_Install_Dir>/vm/inet/props`

2 Open the PVCSServlets.properties file.

Below the following line:

```
subject=PVCS VM I-Net Administrator Notification
```

there are four lines:

```
enabled=
licenses=
email=
client=
```

3 Add the following values to the four lines:

`enabled=`*1*

`licenses=` *number of licenses purchased*

`email=` *e-mail address receiving notification*

`client=` *your outgoing mail (SMTP) server*

4 Save and exit the file.

When the number of unique user names that have logged into VM I-Net exceeds the number of licenses specified in this properties file, VM I-Net sends a license notification to the address defined in the email line.

Upgrading Evaluation Licenses on Windows

You can install an evaluation copy of VM I-Net on Windows and use the software at no cost for 30 days; however, once the evaluation period has expired, you cannot use the product until you purchase a license and upgrade the license by entering a valid IPE key.

To upgrade a license, you use the VM I-Net Configuration utility.

To upgrade licenses:

1. Start the VM I-Net Configuration utility.
2. Select the Licenses tab.
3. Click License Evaluation Copy. The MERANT product registration dialog box appears.
4. To upgrade to a licensed copy, complete all fields in the dialog box, using the serial number and registration key you received when you purchased the product.
5. Verify the registration information and accept the product license agreement to complete the license upgrade.

Upgrading Evaluation Licenses on UNIX

You can install an evaluation copy of VM I-Net on UNIX and use the software at no cost for 30 days; however, once the evaluation period has expired, you cannot use the product until you purchase a license and upgrade the license by entering a valid IPE key.

To license an evaluation copy of VM I-Net:

1. Navigate to the install directory: <*VM_Install_Dir*>/vm/<*os*>/bin
2. Run the vmservreg program. The VM I-Net license registration program launches.
3. When prompted, enter the serial number and IPE key that you received when you purchased the product.
4. Verify the registration information and accept the product license agreement to complete the license upgrade.

13 Managing Security

In this Chapter

Working with Access Control

Access control provides basic user name and password protection for resources hosted on the web server, including VM I-Net.

Using access control with VM I-Net requires users to enter a predefined user name and password when they enter secure areas, called domains, on the web server. A domain can be a specific URL or a URL directory structure.

The user name and password used by the web server are managed separately from the user information managed by VM I-Net. As a result, you must enter a web server user name and password when you access a secure area on the web server in addition to the user name and password that you entered when logging into a Version Manager project database.

For information on how to set up access control on the web server, see the web server product documentation.

Working with Secure Socket Layers

Secure socket layers is an advanced security feature that allows web servers to provide resource protection using the following methods:

- **Encryption.** Allows you to keep the information that passes between the web server and a web browser, including Version Manager data, confidential.
- **Data Integrity Protection.** Provides the means for protecting information that passes between the web server and a web browser from being altered by a third party.

- **Authentication.** The method a web server and web browser use to identify themselves when passing information. This method allows the web server or the web browser to ensure that information is only passed to trusted parties.

Setting Up Secure Socket Layers

You set up secure socket layers on the web server using the user interface provided by the web server. When you set up secure socket layers, you set up a secure web service with a port number that is different from the port number used by the standard web service.

Connecting Users

After you have set up the web server for use with secure socket layers, users must use the https protocol when they access the VM I-Net interface. For example, a user who wants to access a web server via a secure port would open the following URL in his web browser:

`https://<server_name>:443/vminet.html`

Working with Firewalls

If you allow users from outside your local or wide area network to access VM I-Net, you should use firewall protection to ensure that outside users can only access the web server where VM I-Net resides. You can set up your firewall with the web server so that all users accessing VM I-Net from outside the firewall are redirected to a single URL that provides access control and user authentication protection for incoming requests.

For more information on using firewalls, see your firewall software and network software documentation.

14 Managing Performance

In this Chapter

System Considerations

In general, the more powerful the system you use to host VM I-Net, the greater the performance of Version Manager. As discussed in the next section, VM I-Net network topology choices can make or break the performance of even the best server machine. For the best performance, use a dedicated machine for VM I-Net (i.e. no other application is running on the machine).

As with any computer, the amount of available memory (RAM) can be as significant as processor speed in determining system performance. MERANT recommends that your server machine has at minimum 128 MB of memory (RAM) and that you use the fastest machine possible for your server.

Network Topology Considerations

Version Manager frequently accesses disk-based information stored in project data files and archives. Where you store these files in relation to where you install VM I-Net dramatically affects the performance of Version Manager. When deciding upon a location for your project files and archives, consider several factors, such as the number of routers between VM I-Net and the project files and the bandwidth of your network.

Project Files Location

Where you locate project files is the most important decision you must make when planning your VM I-Net installation. The project files should be located on the local disk drives of the VM I-Net machine. Choosing to locate these project files, which are frequently accessed by the server, on a different machine

substantially reduces VM I-Net's performance. MERANT testing shows that crossing a network to reach these files can degrade performance significantly.

Alternatively, if you cannot locate the project files and VM I-Net on the local disk drives of the same machine, then locate the project files within the same network segment as VM I-Net. This type of configuration eliminates any network routers and bridges that must be traversed between VM I-Net and the project files.

Avoid locating the project files and VM I-Net on separate machines located on different network segments. When VM I-Net must process project data across multiple network segments, performance can degrade.

To move the location of project files, refer to Chapter 8, "Working with Project Databases," on page 108.

Archive Location and Network Speed

Although the archive location is not as critical as the location of project files, it can also impact the performance of Version Manager. Ideally, archives should be stored on the VM I-Net machine. If this is not possible, then make sure that the network connection between VM I-Net and the archives is the fastest possible. Typically the fastest connection is achieved through the use of high-speed technology such as FDDI or fiber optics, commonly used in the server rooms of large corporations.

About VM I-Net Daemon Processes

By default, the VM I-Net server runs as a single process, which is limited to serving one user request at a time. However, you can configure the server to run multiple daemon processes, which enables it to service multiple requests concurrently.

Should I Enable Daemons?

Managing the daemon processes will slow performance to some extent, so you should only enable daemons if your configuration will benefit more from the additional processes than it costs to manage them.

Your configuration may benefit from daemons if any of the following are true:

- There are a large number of users.
- There are a large number of files.
- The files are large.

How Many Daemons Should I Enable?

When you enable daemons, a minimum of five are started by default and a maximum of ten can run at one time. On UNIX, you cannot change these defaults. On Windows, you can specify your own values for the minimum and maximum number of daemons.

The more users, files, and bytes you have the more daemons you should have. However, do not initiate more daemons than your hardware can properly serve, as the overhead of managing the daemons could impact performance.

Try the defaults as a starting point to improve your performance and adjust from there, if needed.

Enabling Daemons on Windows

To enable daemons on Windows, you must modify three files and then restart the server.

To enable daemons on Windows:

1. Open the `<VM_Install_Dir>\vm\common\bin\pvcsstart.bat` file in a text editor.
2. Find the following line in the `:start` section:

   `-Dpvcs.daemons.useDaemons=`**`false`**

   And change it to:

   `-Dpvcs.daemons.useDaemons=`**`true`**
3. Save the file.
4. Open the `<VM_Install_Dir>\vm\common\tomcat\conf\jk\wrapper.properties` file in a text editor.
5. Find the following line:

   `-Dpvcs.daemons.useDaemons=`**`false`**

   And change it to:

   `-Dpvcs.daemons.useDaemons=`**`true`**
6. Save the file.
7. Open the `islv.ini` file in a text editor. This file is located in your system's root directory.

8 Add the following text to the file:

```
[DAEMONS]
pvcs.daemons.useDaemons=true
pvcs.daemons.min=NValue
pvcs.daemons.max=XValue
```

Where:

- *NValue* equals the minimum number of daemons to run.
- *XValue* equals the maximum number of daemons to run.

9 Save the file.

10 Restart the server.

Enabling Daemons on UNIX

To enable daemons on UNIX, you must modify one file and then restart the server.

To enable daemons on UNIX:

1 Open the <*VM_Install_Dir*>/vm/common/bin/pvcsstart.sh file in a text editor.

2 Find the following line:

```
-Dpvcs.daemons.useDaemons=false
```

And change it to:

```
-Dpvcs.daemons.useDaemons=true
```

3 Save the file.

4 Restart the server.

Web Server Considerations

You may be able to increase the performance of VM I-Net by using the service tuning features of the web server. These features typically let you specify connection capacity, the size of memory cache settings, and thread-handling settings.

For more information on optimizing the web server performance, see the web server product documentation.

Recommended Configuration

For optimum performance, we recommend that you host VM I-Net, Version Manager project files and Version Manager archives on a single, high-powered machine. Using this setup, VM I-Net processes all requests locally, without having to transfer project or archive data over a network connection. This setup provides the fastest possible connection.

Maintaining Optimum Performance

During regular use, VM I-Net and Version Manager each create temporary files for their own use. In addition, Version Manager creates file delta images for its own use. Managing these types of files will increase the performance of the VM Client/Server system.

When archives are updated (check in, lock, label, etc.), temporary files are created in the process. Typically, both VM I-Net and Version Manager delete these files when the archives are successfully updated; however, as a safety feature,

these temporary files are not deleted if a problem occurs during the archive update process. In the event of a failure, any data that was lost can usually be found in the temporary files.

Dated and abandoned temporary files are generally not useful. These files should be deleted. If you do not delete these temporary files, they can collect over time, consuming significant disk space.

Managing Temporary VM I-Net Files

VM I-Net temporary files are, by default, placed in the `/tmp` directory on UNIX machines and in the `<VM_Install_Dir>\vm\inet\temp` directory on Windows machines.

Because VM I-Net creates a temporary file each time an archive update occurs, these temporary files can consume significant disk space. Make sure that the disk space allocated to the temporary directory is sufficient for your needs. Periodically check VM I-Net's temporary file directory and delete any oudated temporary files.

Managing Temporary Version Manager Files

Refer to the *PVCS Version Manager Administrator's Guide* for details on managing the Version Manager temporary files.

Managing Delta Generation for Large Files

When Version Manager stores revisions of files in archives, it generates delta (or difference) images for nontip revisions. When a large file (in the tens of megabytes range) is checked into an

archive Version Manager requires greater time to generate the delta. Furthermore, the time increases nonlinearly as the size of the file increases.

Individual archives can be configured to not generate delta images. For large files the performance benefit of this configuration can be very substantial. However, the archive file size may grow at a faster rate, particularly with text files. Binary files may actually produce smaller archive files with delta generation turned off.

You can turn off delta generation by modifying the configuration of an existing archive, or you can specify that all new archives of a certain file type are not created using deltas.

To turn off delta generation for a specific archive or set of archives:

1. Start the Version Manager graphical user interface.
2. From the Admin menu, select Configure Project.
3. Select the File Types tab.
4. In the File Types list, either select the extension or create a new extension for the type of file you want to manage.
5. To turn off delta generation, uncheck Store Deltas.
6. Click OK or Apply.

Managing I-Net Performance Using File Transfer Compression

VM I-Net compresses archive files before transferring them across WAN or LAN networks. The default compression level is set to “4”, a medium level setting. You can adjust or disable the compression level by modifying the compressionLevel parameter in the tomcat web.xml file.

To adjust the compression level:

1. In the tomcat web.xml file, navigate to the vminet parameter called `compressionLevel`.
2. Adjust the compression level setting to a value between `1` and `9`, where `1` is the fastest and offers the least amount of compression and `9` is the slowest and offers the greatest amount of compression.
3. Save and close the file.

If you are using a slower machine on a fast network, this compression may not be optimal for your environment due to the overhead of compressing and uncompressing this data. In this case, you may want to disable this feature.

To disable VM I-Net compression:

1. In the tomcat web.xml file, navigate to the vminet parameter called `compressionLevel`.
2. Adjust the compression level setting value to `0`.
3. Save and close the file.

15 Uninstalling VM I-Net

In this Chapter

Uninstalling VM I-Net from Windows

How you uninstall a web server varies according to the web server software you are using. Locate the instructions for your web server in the following sections.

When Using iPlanet Web Server

To uninstall VM I-Net on a Windows machine that is using iPlanet Web Server, launch the VM I-Net uninstall program and follow the on-screen prompts. The uninstall program removes program files, directories and registry entries.

To uninstall VM I-Net on Windows:

1. Stop the web server as described in "Starting and Stopping a Web Server Instance" on page 132.
2. Stop VM I-Net as described in "Running VM I-Net on Windows" on page 138.
3. From the Start Menu select Settings | Control Panel.
4. Double-click Add/Remove Programs.
5. In the Install/Uninstall tab, select PVCS Version Manager, then click Add/Remove.
6. Select Modify and then click Next.
7. Uncheck **PVCS VM I-Net** and any other components that you want to uninstall from the dialog box that opens.
8. Click OK.

When Using Microsoft Internet Information Server

To uninstall VM I-Net on a Windows machine that uses Microsoft Internet Information server, you must first remove the virtual directories from Microsoft Internet Information Server. You then launch the VM I-Net uninstall program and follow the on-screen prompts. The uninstall program removes program files, directories and registry entries.

To uninstall VM I-Net from Microsoft Internet Information Server:

1. Stop VM I-Net as described in "Running VM I-Net on Windows" on page 138.
2. Launch the Microsoft Management Console by selecting:

   Start | Programs | Windows NT 4.0 Option Pack | Microsoft Internet Information Server

   and then select the appropriate interface:

   - Internet Service Manager
   - Internet Service Manager (HTML)

   The Microsoft Management Console appears.
3. Navigate to the web server where you installed VM I-Net and double-click to view its contents.
4. Delete these virtual web directories:

   - vminet_temp
   - vminet_images
   - vminet_books
   - jakarta

   a. Select the virtual web directory to be deleted.

   b. Click the Delete button on the toolbar.

c When prompted to confirm the deletion, click Yes.

5 Right-click on web server where you installed VM I-Net and select Properties. The Properties dialog box appears.

6 Select the ISAPI Filters tab.

7 Select jakarta and click Remove.

8 Click OK.

9 Close the Microsoft Management Console.

10 In the Services control panel, select the **World Wide Web Publishing Service**, then click Stop.

11 Whenever a message appears asking if you want to stop a service, click OK.

12 After the web servers have been stopped, close the Services control panel.

13 From the Start Menu select Settings | Control Panel.

14 Double-click Add/Remove Programs.

15 In the Install/Uninstall tab, select PVCS Version Manager, then click Add/Remove.

16 Select Modify and then click Next.

17 Uncheck **PVCS VM I-Net** and any other components that you want to uninstall from the dialog box that opens.

18 Restart your computer.

Uninstalling VM I-Net from UNIX

To uninstall VM I-Net, you must remove it from the iPlanet or Apache web server.

To uninstall VM I-Net:

1. Stop VM I-Net as described in "Running VM I-Net on UNIX" on page 139.
2. Stop the web server as described in "Starting and Stopping a Web Server in iPlanet Web Server" on page 132.
3. Remove all files and subdirectories from the following directory, then remove the directory itself:

   `<VM_Install_Dir>/vm/inet`
4. Log in as root.
5. Do one of the following:

   - For iPlanet:

     a. Change directory to `<iPlanet_Install_Dir>/https-<server name>/config`.

     b. Replace the obj.conf file with the old obj.conf file that you backed up after the VM I-Net installation.

   - For Apache:

     a. Open the httpd.conf file from `<Apache_Install_Dir>/conf` and remove the following line from the file:

     ```
     include <VM_Install_Dir>/vm/inet/install/httpd_pvcs.conf
     ```

     b. Save and close the http.conf file.

   VM I-Net is now deleted from the web server. You must reinstall VM I-Net before you can use VM I-Net again.

Part 4: Installing Other Version Manager Interfaces

Part 4: Installing Other Version Manager Interfaces contains the following chapters:

16 Installing the Development Interface

In this Chapter

About the Development Interface

With the Version Manager Development Interface, you can access Version Manager features from within integrated development environments (IDEs). Without ever leaving the development environment, you can get files, check files out, check files in, and more.

You can use the Development Interface with any of the following:

SCC projects

- Projects in supported Source Code Control (SCC) Interface compliant IDEs, including Microsoft Visual Basic, Microsoft Visual C++, Microsoft Visual InterDev, Sybase PowerBuilder, Macromedia ColdFusion Studio, IBM VisualAge for Java, Rational Rose Enterprise, Microsoft Visual Studio .NET, IBM WebSphere Studio, and WebGain VisualCafe. See "Installing the Development Interface" on page 172 for more information.

Web projects

- Web projects in supported COM Interface compliant IDEs, including Microsoft FrontPage and Microsoft Visual InterDev. For information on installing the Development Interface for use with web projects, see "Installing to a Web Server" on page 174.

Eclipse projects

- Projects in supported Eclipse Interface compliant IDEs, including IBM Websphere Studio Application Developer.

System Requirements

The system must meet the requirements specified for Version Manager in the Version Manager readme file (readmevm.html) or on the Version Manager product page on http://www.merant.com/pvcs.

If you will use the Development Interface with FrontPage or Visual InterDev web projects, a supported web server must be

installed to the system. See "Installing to a Web Server" on page 174 for more information.

IMPORTANT! The Development Interface requires that Version Manager is installed on your system. If you wish to use the current version of the Development Interface with a prior version of Version Manager, check the readme for compatibility.

Development Interface Documentation

The *PVCS Version Manager Development Interface Implementation Guide* is provided on the PVCS series CD-ROM. It is installed as part of the PVCS VM Documentation set. A complete online help system is also provided with the Development Interface. Once you have installed the Development Interface, you can access the online help system and readme file from the PVCS VM Development Interfaces program group in your Start menu, and the online manual from the PVCS VM Documentation item in your Start menu.

For more information about the PVCS documentation, refer to the *PVCS Version Manager Getting Started Guide*.

Installing the Development Interface

Follow the procedure below if you will use the Development Interface with Microsoft SCC or Eclipse compliant IDEs. For information on installing the Development Interface to a web server, for use with Microsoft FrontPage or Visual InterDev web projects, see "Installing to a Web Server" on page 174.

Workstation installation

You can install the Development Interface to your local drive or to a network location. If a network install is performed you can then perform a Workstation Install and run a shared version of the components that were installed on the network. For instructions on performing a Workstation Install, see "Preparing a Workstation Installation" on page 40.

IMPORTANT! To set up workstation installation components, you must install Version Manager and the Development Interface to a network location. However, if you will use the Development Interface with FrontPage or Visual InterDev web projects, you must install it *directly* to a web server.

To install the Version Manager Development Interface:

NOTE You must have Administrator privileges to install the Version Manager Development Interface.

---

1. Complete steps 1 through 9 of the Version Manager installation procedure, as described in the section "Installing Version Manager from CD-ROM" on page 35.
2. When prompted to select the type of installation in the Setup Type window, select the **Local** or **Network** option.

3 When prompted to select the Version Manager components to install, select the following:

- (Optional, recommended) **PVCS Version Manager** (if Version Manager is not already installed)
- **PVCS VM Development Interfaces**, which contains the Development Interface for version management within integrated development environments (IDEs)
- (Optional) **PVCS VM Documentation** (Books), which includes the online manual for the Version Manager Development Interface
- (Optional) **Merant Plugin for Eclipse**, to integrate with Eclipse based IDEs, such as IBM WSAD
- (Optional) **PVCS Workstation Install** (available with Network installation only) which installs a workstation setup program that users must run in order to configure their workstations to run Version Manager and the Development Interface from the network

4 Click the **Next** button. You are prompted to select a default project database for your Development Interface projects. This project database will then be the default selection in SCC compliant IDEs. For more information about setting and using a default project database with the Development Interface, see the *PVCS Version Manager Development Interface Implementation Guide*.

5 If you are installing the **Merant Plugin for Eclipse**, you will be prompted to specify the installation directory of your Eclipse-based IDE. Note the following:

- Based on the version of Eclipse found in the directory you specify, an Eclipse 1 or Eclipse 2 integration will be installed.
- To integrate to multiple Eclipse installations, you must run the Version Manager installer once for each Eclipse installation.

6 Follow the remaining prompts to complete the installation.

Installation registers the Version Manager Development Interface as the active source control provider on the system. You can access the Development Interface the next time you start a supported SCC or Eclipse compliant development environment. For more information on using the Development Interface, see the *PVCS Version Manager Development Interface Implementation Guide*.

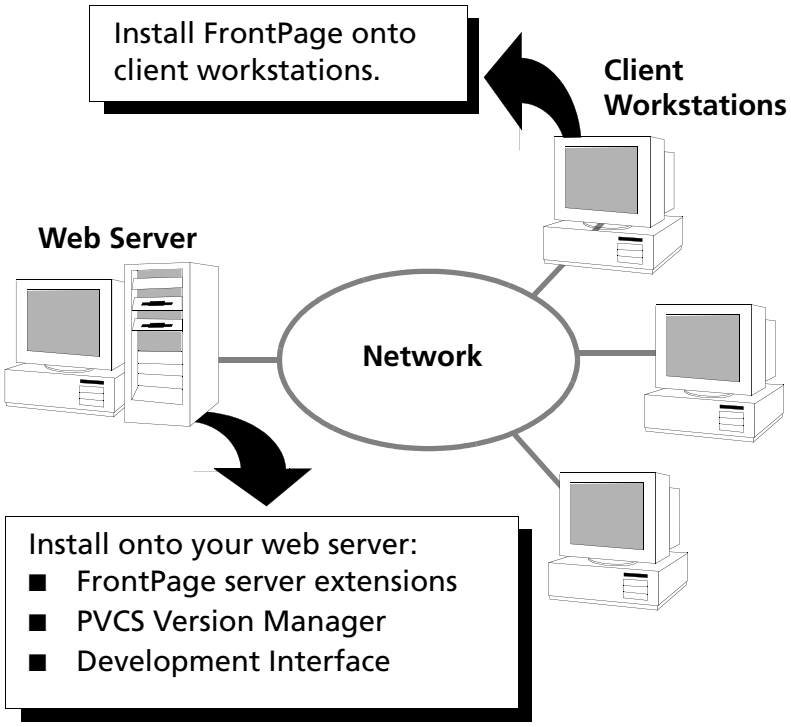
Installing to a Web Server

To set up the Version Manager Development Interface for use with Microsoft FrontPage or Visual InterDev web projects, you must complete the following steps:

1 Install FrontPage server extensions onto your web server.

2 Install the PVCS Version Manager Development Interface directly to your web server.

3 If necessary, install FrontPage or Visual InterDev onto client workstations.



Supported Web Server Configurations

The Version Manager Development Interface is compatible with the following web server configurations:

Use this web server…	With this operating system…
Microsoft's Internet Information Server 5.0	Windows 2000
Internet Information Server 4.0	Windows NT 4.0
Peer Web Server 2.0	Windows NT 4.0

The *FrontPage* Personal Web Server is not compatible with the Version Manager Development Interface. If the FrontPage Personal Web Server is installed on your system, you must download the *Microsoft* Personal Web Server from the Microsoft website.

IMPORTANT! The Microsoft Personal Web Server does not support remote authoring of web projects. You must author web projects locally at the server.

Install FrontPage Server Extensions

After you have set up a web server on your Windows NT or Windows 2000 server, you are ready to install the FrontPage 98 or FrontPage 2000 extensions onto your web server.

For step-by-step information on installing FrontPage server components, follow the installation instructions that come with FrontPage.

For information on configuring your web server to work with Version Manager projects, see the *PVCS Version Manager Development Interface Implementation Guide*.

Install the Version Manager Development Interface

When you install the Development Interface, you must select a default project database for your Interface projects. For FrontPage or Visual InterDev projects, the default project database must be located locally on the web server. By default, if you do not select one, Version Manager creates a database for you.

IMPORTANT! To work with FrontPage or Visual InterDev web projects, you must install the Version Manager Development Interface directly onto your web server. Do not install it from a client workstation.

To install the Development Interface to your web server:

1. Complete steps 1 through 9 of the Version Manager installation procedure, as described in the section "Installing Version Manager from CD-ROM" on page 35.
2. When prompted to select the type of installation in the Setup Type window, select the **Web Server** option.
3. When prompted to select the Version Manager components to install, select the following, and then click the Next button:
   - (Optional, recommended) **PVCS Version Manager** (if Version Manager is not already installed)
   - **PVCS VM Development Interfaces**, which contains the Development Interface for version management within integrated development environments (IDEs)
   - (Optional) **PVCS VM Documentation** (Books), which includes the Version Manager Development Interface Implementation Guide

NOTE Because you must install the Development Interface directly to your web server to work with FrontPage or Visual InterDev web projects, you cannot simultaneously install the workstation installation components.

4 When you are prompted to select a default project database for your Development Interface projects, do one of the following:

- Accept the default and click the Next button. By default, when you install the Development Interface, Version Manager creates a default project database named IDE Project Database under <*VM_Install_Dir*>\vm\devint.
- Click the Browse button to select or create a different default project database, and then click the Next button.

NOTE You must place the default project database on a drive that physically resides on the web server. You can change the default project database by reinstalling the Development Interface and selecting a different database.

5 Follow the on-screen dialog box prompts to complete the installation.

Install FrontPage or Visual InterDev to Your Client Workstations

If necessary, after you have successfully installed the Version Manager Development Interface onto your web server, install FrontPage or Visual InterDev onto your client workstations.

For step-by-step information on installing FrontPage or Visual InterDev client components, follow the installation instructions that come with the products.

Once you have completed installation, refer to the *PVCS Version Manager Development Interface Implementation Guide* for instructions on using the Version Manager Development Interface in your particular web environment.

17 Installing the PVCS Developer's Toolkit

In this Chapter

About the Developer's Toolkit

The Developer's Toolkit (DTK), an optional component of Version Manager, is an application programming interface (API) that provides interfaces to PVCS Version Manager and PVCS Configuration Builder functions. Using these functions, you can create graphical, workbench, and command-line applications.

System Requirements

If you are installing the DTK as a component of Version Manager, then the system must meet the requirements specified for Version Manager in the Version Manager readme file (readmevm.html) or on the Version Manager product page on http://www.merant.com/pvcs. If you are installing the DTK by itself, without installing Version Manager, then refer to the DTK system requirements in the Version Manager readme file.

DTK Documentation

An online copy of the *PVCS Developer's Toolkit Reference Guide* is provided on the PVCS Series CD-ROM. For more information about the PVCS documentation, refer to the *PVCS Version Manager Getting Started Guide*.

You can also order a printed version of this manual. For more information, refer to "Ordering Hard-Copy Manuals" on page 13.

Installing the Developer's Toolkit

On both Windows and UNIX, the DTK installation program is now part of the Version Manager installation procedure.

Installing the DTK on Windows

The option to install the DTK is part of the Version Manager installation program. By default, the DTK option is not selected.

To install the DTK on Windows:

1. Complete steps 1 through 10 of the Version Manager installation procedure, as described in the section "Installing Version Manager from CD-ROM" on page 35.
2. When prompted to select the Version Manager components to install, select the **PVCS VM Developer's Toolkit** option.
3. Follow the remaining prompts to complete the installation.

Checking the Location of DLLs on Windows

The applications that use the DTK must be able to find the DTK's DLLs in one of the locations listed below.

- A directory specified by the PATH statement in your:
  - AUTOEXEC.BAT (Win98)
  - PATH variable in System/Environment properties (WinNT/2000/XP)
- The directory that contains your executable
- The current directory

- The WINDOWS directory
- The WINDOWS\SYSTEM directory (SYSTEM32 for Windows NT/2000/XP)

Installing the DTK on UNIX

The option to install the DTK is part of the Version Manager installation program. By default, the DTK option is not selected.

To install the DTK on UNIX:

1. Complete steps 1 through 10 of the Version Manager installation procedure, as described in the section "Installing Version Manager from CD-ROM" on page 53.
2. When prompted to select the Version Manager components to install, select the **PVCS Developer's Toolkit (DTK)** option.
3. Follow the remaining prompts to complete the installation.

Licensing the Developer's Toolkit

Purchasing the DTK does not grant you permission to distribute applications you create with the DTK outside of your organization.

Distributing PVCS Version Manager Functions

If you distribute an application that calls PVCS Version Manager functions outside of your organization, you must purchase a PVCS Version Manager license for each user of the application or

complete an Original Equipment Manufacturer (OEM) agreement with MERANT.

Distributing PVCS Configuration Builder Functions

If you distribute an application that calls PVCS Configuration Builder functions, you must purchase a PVCS Configuration Builder license for each user of the application or complete an OEM agreement with MERANT.

18 Installing WebDAV Server

In this Chapter

Introduction

This chapter provides instructions for installing, configuring, and running WebDAV Server. In this chapter, you'll learn how to:

- Complete the installation.
- Start and stop WebDAV Server.
- Configure the supported web servers to work with WebDAV Server.
- Uninstall WebDAV Server.

Refer to the *PVCS Version Manager WebDAV Server Implementation Guide* for information about how to:

- Configure Version Manager to work with WebDAV Server.
- Administer WebDAV Server.
- Configure WebDAV clients.

Before You Install

WebDAV Server is supported on Windows and UNIX operating systems. For specific supported platform and version information, refer to the Version Manager readme file (readmevm.html) or select the Version Manager product link on http://www.merant.com/pvcs.

Supported Web Server Configurations

WebDAV Server is compatible with the following web server configurations:

Use this web server…	With this operating system…
Microsoft Internet Information Server 4.0	Windows NT
Microsoft Internet Information Server 5.0	Windows 2000
Apache 1.3.x	Solaris, HP-UX, AIX, Linux
iPlanet 4.1 SPx	Windows, Solaris, HP-UX, AIX
iPlanet 6.0	Windows, Solaris, HP-UX

Upgrading WebDAV Server

Merant recommends uninstalling previous versions of WebDAV Server before installing the new version. Refer to the uninstall instructions in previous releases of the documentation.

Installing WebDAV Server on Windows

To install WebDAV Server on Windows:

1. Log in as Administrator or with administrator privileges.
2. Follow steps 1 through 9 of the Version Manager installation procedure, as described in the section "Installing Version Manager from CD-ROM" on page 35.
3. When prompted to select the type of installation in the Setup Type window, select the **Web Server** option.

4 Select the **PVCS VM WebDAV** option from the list of Version Manager components to install.

5 Follow the remaining prompts to complete installation.

The installation uses default values for these WebDAV properties:

Property	Default Value
Tomcat port number	8080
Project database	Sample project database (installed by default)
Workspace	Root workspace

See the "Administering WebDAV Server" chapter in the *PVCS Version Manager WebDAV Server Implementation Guide* for details about WebDAV properties and how to change them.

Installing WebDAV Server on UNIX

To ensure that users have the appropriate permissions set to use both WebDAV Server and the Version Manager GUI, follow these guidelines:

- If you are running Version Manager in setuid mode, install WebDAV Server using the same user ID, in order to maintain permissions.
- If you are not running Version Manager in setuid mode, make sure that the WebDAV Server Group ID is identical to the users' Group ID for Version Manager.
- Do not install WebDAV Server as root.

To install WebDAV Server on UNIX:

1 Follow steps 1 through 10 of the Version Manager installation procedure, as described in the section "Installing Version Manager from CD-ROM" on page 53.

2 Select the **PVCS Version Manager WebDAV for UNIX** option from the list of Version Manager components to install.

3 Follow the remaining prompts to complete installation.

The installation uses default values for these WebDAV properties:

Property	Default Value
Tomcat port number	8080
Project database	Sample project database
Workspace	Root workspace

See the "Administering WebDAV Server" chapter in the *PVCS Version Manager WebDAV Server Implementation Guide* for details about WebDAV properties and how to change them.

Uninstalling WebDAV Server

To uninstall WebDAV Server:

1 Shut down WebDAV Server and any configured web server. See "Starting and Stopping WebDAV Server" on page 190.

2 Do one of the following:

On Windows:

a Go to Start | Settings | Control Panel and select Add/ Remove Programs.

b Select PVCS Version Manager from the list and click Add/Remove.

c Click Modify and then uncheck the **PVCS VM WebDAV** option.

NOTE The cache and logs directories are not removed. These directories contain important data, including temporary files, locks, resource properties, and the WebDAV log, which should be manually deleted only after careful examination.

On UNIX:

Delete the <*VM_Install_Dir*>/vm/common/tomcat/webapps/dav directory and its contents.

3 If you've made any modifications for the web servers, undo those changes in the appropriate files.

Starting and Stopping WebDAV Server

To start WebDAV Server, you start Tomcat, the application server that is installed that enables WebDAV Server to run. For evaluation purposes, you can use Tomcat standalone and access it at port number 8080, or you can configure one of the supported web servers to work in conjunction with Tomcat. See "Configuring Microsoft IIS Web Servers" on page 192, "Configuring Apache Web Server on UNIX" on page 200, and "Configuring iPlanet Web Server" on page 195 for instructions.

For information on Tomcat, go to http://jakarta.apache.org/tomcat.

You must start Tomcat (along with any configured web server) on the server machine before WebDAV Server can be accessed by a WebDAV client. Once you have started Tomcat, it will continue to

run until you shut it down manually or shut down the machine on which it is installed.

NOTE WebDAV Server and VM I-Net use the same installation of Tomcat. If you start or stop one feature, then the other feature automatically starts or stops.

To start Tomcat on Windows:

Go to Start | Programs | PVCS Version Manager | PVCS VM WebDAV | Start PVCS VM Application Server.

To start Tomcat on UNIX:

1. Log in as the user ID who performed the WebDAV Server installation.
2. Change directory to:
   `<VM_Install_Dir>/vm/common/bin`
3. Enter `./pvcsstart.sh`

To stop Tomcat on Windows:

Go to Start | Programs | PVCS Version Manager | PVCS VM WebDAV | Stop PVCS VM Application Server.

To stop Tomcat on UNIX:

1. Log in as the user ID who performed the WebDAV Server installation.
2. Change directory to:
   `<VM_Install_Dir>/vm/common/bin`
3. Enter `./pvcsstop.sh`

Running Tomcat as a Service

To run Tomcat as a service, select Start | Programs | PVCS Version Manager | PVCS VM WebDAV | Install PVCS VM Application Server as a service.

To subsequently stop running Tomcat as a service, select Start | Programs | PVCS Version Manager | PVCS VM WebDAV | Uninstall PVCS VM Application Server as a service.

NOTE Since WebDAV Server and VM I-Net use the same installation of Tomcat, if you install or uninstall Tomcat as a service for one feature, this takes effect for the other feature as well.

Configuring Microsoft IIS Web Servers

To configure Microsoft IIS 4.0 and 5.0 web servers to work with WebDAV Server, you must perform the following tasks:

- Configure the ISAPI Redirector.
- Configure security.

Once you have completed these tasks, you must restart IIS.

Configuring the ISAPI Redirector

Configure IIS to use the Redirector plug-in so that IIS can send requests to Tomcat. You must also add context (`/dav`) to the Redirector so that the correct servlet is identified when you enter the URL to WebDAV Server.

NOTE If you have installed VM I-Net and have enabled IIS in the VM I-Net Configuration utility, you can skip steps 2 - 9 below. Proceed to step 10.

To configure the ISAPI Redirector:

1 Start the Microsoft Management Console:

- On Windows NT for IIS 4.0

  Select Start | Programs | Windows NT 4.0 Option Pack | Microsoft Internet Information Server | Internet Service Manager.

- On Windows 2000 for IIS 5.0

  Select Start | Settings | Control Panel | Administrative Tools | Computer Management | Services & Applications | Internet Information Services.

2 Select Default Web Site and select Action | New | Virtual Directory, or right-click Default Web Site and select New | Virtual Directory.

3 Complete the Virtual Directory Creation wizard:

   a Enter `jakarta` as the virtual directory alias.

   b Enter or browse to <*`VM_Install_Dir`*>`\vm\common\tomcat\bin\win32\`.

   c Add the Execute permission to this directory.

4 Return to the main window and select the Default Web Site and then select Action | Properties, or right-click Default Web Site and select Properties.

5 Select the ISAPI Filters tab and click Add to access the Filter Properties dialog box.

6 Enter `jakarta` in the **Filter Name** field.

7. Enter or browse to <*VM_Install_Dir*>\vm\common\tomcat\bin\win32\ directory and select isapi_redirect.dll in the **Executable** field.
8. Click OK as necessary.
9. Go back to the ISAPI Filters tab and make sure the jakarta filter is prefixed by a green up arrow. You may need to restart IIS.
10. Select Default Web Site and select Action | Properties, or right-click Default Web Site and select Properties.
11. Select the ISAPI Filters tab and click Add to access the Filter Properties dialog box.
12. Enter `TranslateF` in the **Filter Name** field.
13. Enter or browse to the <*VM_Install_Dir*>\vm\webdav\bin directory and select MrntAdmDav.dll in the **Executable** field.
14. IIS will automatically set the priority to low. If the priority is unknown, then you must restart the World Wide Web Publishing Service.
15. Click OK as necessary.
16. Stop and start IIS.

Configuring Security

Configure IIS so that only WebDAV Server authenticates the user.

To configure security:

1. From the Microsoft Management Console, select Default Web Site and select Action | Properties, or right-click Default Web Site and select Properties.

2 Select the Directory Security tab and click the Edit button under Anonymous access and authentication control.

3 Make sure that **Anonymous access** is checked. This allows the user to bypass IIS authentication and proceed directly to WebDAV Server authentication.

4 Under Authenticated access, make sure that **Basic authentication** and **Integrated Windows authentication** are both unchecked.

5 Exit the Properties dialog box and restart IIS.

Configuring iPlanet Web Server

To configure the iPlanet web server to work with WebDAV Server, you must modify the iPlanet configuration file(s).

Modifying the iPlanet obj.conf File

Modify the iPlanet configuration file to enable communication between iPlanet and Tomcat. Note that there are differences between configuring iPlanet 4.1 and 6.0, as shown in the following procedures.

To modify obj.conf for Windows and iPlanet 4.1:

1 Open the obj.conf file from <*iPlanet_Install_Dir*>/`https-`<*server name*>/`config`, where <*server name*> is the name of the machine running WebDAV Server.

2 Insert these lines before the entry `Init fn=flex-init`.

> **NOTE** If you have installed VM I-Net and have enabled iPlanet in the VM I-Net Configuration utility, you do not need to specify the first two `Init fn` lines below. Start with the `Init fn="load-modules"` line instead.

```
Init fn="load-modules" funcs="jk_init,jk_service"
shlib="<VM_Install_Dir>/vm/common/tomcat/bin/win32/
nsapi_redirect.dll"

Init fn="jk_init" worker_file="<VM_Install_Dir>/vm/common/tomcat/
conf/jk/workers.properties" log_level="debug"
log_file="<VM_Install__Dir>/vm/common/tomcat/logs/nsapi.log"

Init fn="load-modules"
funcs="init_pvcs_dav_options,pvcs_dav_options"
shlib="<VM_Install_Dir>/vm/webdav/bin/PvcsServices.dll"
```

3. Insert this line before the entry `<Object name=default>`:

```
Init fn="register-http-method"
methods="PUT,GET,OPTIONS,POST,COPY,HEAD,INDEX,MOVE,MKDIR,DELETE,LO
CK,MKCOL,PROPFIND,PROPPATCH,UNLOCK,TRACE"
```

4. Insert these lines before the entry `NameTrans fn=document-root`:

```
NameTrans fn="assign-name" from="/dav" name="dav_servlet"
NameTrans fn="assign-name" from="/dav/*" name="dav_servlet"
NameTrans fn="assign-name" from="/_vti_bin/*" name="dav_servlet"
```

5. Comment the following line by preceding it with a pound sign (#):

   ```
   # PathCheck fn="check-acl" acl="default"
   ```

6. Insert this line in the `Service method` section:

   ```
   Service method="OPTIONS" fn="pvcs_dav_options"
   ```

7. Insert these lines at the end of the file:

   ```
   <Object name="dav_servlet">
   ObjectType fn=force-type type=text/plain
   ```

```
Service fn="jk_service" worker="ajp13"
</Object>
```

8 Save and close the file.

To modify magnus.conf and obj.conf for Windows and iPlanet 6.0:

1 Open the magnus.conf file from <*iPlanet_Install_Dir*>/https-<*server name*>/config, where <*server name*> is the name of the machine running WebDAV Server.

2 Follow steps 2 - 3 in the Windows and iPlanet 4.1 procedure, above.

3 Save and close the file.

4 Open the obj.conf file from <*iPlanet_Install_Dir*>/https-<*server name*>/config, where <*server name*> is the name of the machine running WebDAV Server.

5 Follow steps 4 - 8 in the Windows and iPlanet 4.1 procedure, above.

To modify obj.conf for UNIX and iPlanet 4.1:

1 Open the obj.conf file from <*iPlanet_Install_Dir*>/https-<*server name*>/config, where <*server name*> is the name of the machine running WebDAV Server.

2 Insert these lines before the entry `Init fn=flex-init`. Substitute `solaris`, `hpux`, or `aix` for <*os*>, and the associated file name extensions for `nsapi_redirector.*` and `PvcsServices.*`.

NOTE If you have installed VM I-Net and have enabled iPlanet in the VM I-Net Configuration utility, you do not need to specify the first two `Init fn` lines below. Start with the `Init fn="load-modules"` line instead.

```
Init fn="load-modules" funcs="jk_init,jk_service"
```

```
shlib="<VM_Install_Dir>/vm/tomcat/bin/<os>/nsapi_redirector.*"

Init fn="jk_init" worker_file="<VM_Install_Dir>/vm/common/tomcat/
conf/jk/workers.properties" log_level="debug"
log_file="<VM_Install__Dir>/vm/tomcat/logs/nsapi.log"

Init fn="load-modules"
funcs="init_pvcs_dav_options,pvcs_dav_options"
shlib="<VM_Install_Dir>/vm/webdav/lib/<os>/PvcsServices.*"
```

3 Insert this line before the entry <Object name=default>:

```
Init fn="register-http-method"
methods="PUT,GET,OPTIONS,POST,COPY,HEAD,INDEX,MOVE,MKDIR,DELETE,L
OCK,MKCOL,PROPFIND,PROPPATCH,UNLOCK,TRACE"
```

4 Insert these lines before the entry NameTrans fn="NSServletNameTrans":

```
NameTrans fn="assign-name" from="/dav" name="dav_servlet"
NameTrans fn="assign-name" from="/dav/*" name="dav_servlet"
NameTrans fn="assign-name" from="/_vti_bin/*" name="dav_servlet"
```

5 Comment the following line by preceding it with a pound sign (#):

```
# PathCheck fn="check-acl" acl="default"
```

6 Insert this line in the Service method section:

```
Service method="OPTIONS" fn="pvcs_dav_options"
```

7 Insert these lines at the end of the file:

```
<Object name="dav_servlet">
ObjectType fn=force-type type=text/plain
Service fn="jk_service" worker="ajp13"
</Object>
```

8 Save and close the file.

To modify magnus.conf and obj.conf for UNIX and iPlanet 6.0:

1 Open the magnus.conf file from <*iPlanet_Install_Dir*>/https-<*server name*>/config, where <*server name*> is the name of the machine running WebDAV Server.

2 Follow steps 2 - 3 in the UNIX and iPlanet 4.1 procedure, above.

NOTE AIX is supported on iPlanet 4.1 only. It is not supported on iPlanet 6.0.

---

3 Save and close the file.

4 Open the obj.conf file from <*iPlanet_Install_Dir*>/https-<*server name*>/config, where <*server name*> is the name of the machine running WebDAV Server.

5 Follow steps 4 - 8 in the UNIX and iPlanet 4.1 procedure, above.

Configuring Apache Web Server on UNIX

To configure the Apache web server to work with WebDAV Server, you must perform the following tasks:

- Install a web server adapter.
- Modify the Apache configuration file.

Installing a Web Server Adapter

Install the web server adapter to enable communication between Apache and WebDAV Server. For information on the web server adapter, go to: http://jakarta.apache.org/tomcat/tomcat-3.3-doc/mod_jk-howto.html.

To install the web server adapter:

1 Change directory to:

<*VM_Install_Dir*>/vm/common/tomcat/bin/<*os*>

where <*os*> represents aix, hpux, linux, or solaris.

2 Copy mod_jk.so (Solaris, HP-UX, and Linux) or mod_jk.a (AIX) to <*Apache_Install_Dir*/libexec.

Modifying the Apache Configuration File

Modify the Apache configuration file so Apache can load and initialize the web server adapter, as well as forward specific requests to WebDAV Server.

To modify the configuration file:

1. Log in as root.
2. Change directory to <*Apache_Install_Dir*>/conf.
3. Open the httpd.conf file.
4. To integrate with Dreamweaver, add this line in the "Customize behavior based on browser" section, between the <IfModule mod_setenvif.c> and </IfModule>:

```
BrowserMatch "Dreamweaver.*" nokeepalive downgrade-1.0 force-
response-1.0
```

5. Add these lines to the end of the file:

```
#include the jk adapter config file
include <VM_Install_Dir>/vm/common/tomcat/conf/jk/mod_jk.conf
```

6. Save and close the file.
7. Create a new mod_jk.conf file in this directory.

NOTE If the file already exists, back up the file by renaming it to mod_jk.conf.old and then create the new mod_jk.conf file.

---

8. Add these lines to the file and save it. If using AIX, substitute mod_jk.a for mod_jk.so in the second line below.

```
<IfModule !mod_jk.c>
LoadModule jk_module <Apache_Install_Dir>/libexec/mod_jk.so
</IfModule>
```

```
JkWorkersFile "<VM_Install_Dir>/vm/common/tomcat/conf/jk/
workers.properties"
JkLogFile "<VM_Install_Dir>/vm/common/tomcat/logs/mod_jk.log
JkLogLevel error
JkMount /admin ajp13
JkMount /admin/* ajp13
JkMount /examples ajp13
JkMount /examples/* ajp13
JkMount /dav ajp13
JkMount /dav/* ajp13
```

Testing the Web Server

After you have configured IIS, iPlanet, or Apache, you can test the connection to the web server by adding a Web Folder or Network Place on a Windows machine.

To test the web server:

1. Start WebDAV Server and the configured web server. See "Starting and Stopping WebDAV Server" on page 190.
2. Open Windows Explorer.
3. Do one of the following:
   - On Windows 2000 or XP, select My Network Places and double-click the Add Network Place icon.
   - On Windows NT, select My Computer, and then select Web Folders and double-click the Add Web Folder icon.
4. Enter the following location:

   `http://<hostname>:<port>/dav`

   where <*hostname*> is the name of the system hosting the web server and <*port*> is the web server port number. By default, the port number is 8080.

5 Click the Next button.

If you can log in and see the contents of the project database, then the web server is configured correctly.

Index

A

B

C

D

E

F

G

H

I

J

L

M

N

O

P

R

S

T

U

V

W

X